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By TORONTO BUREAU OF MUNICIPAL RESEARCH

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IV

(Concluded from last issue)

DIVISION OF SANITATION.

What It is.

The Division of Sanitation is the organization through which the Department of Public Health deals with public nuisances.

What It Does.

The chief function of the division is, of course, the suppression of nuisances, such, for example, as those arising from defective plumbing and drainage; foul conditions in stables, cellars, etc.

The division inspects the premises of factories as far as outside nuisances are concerned. It also inspects restaurants as to cleanliness and proper equipment. Prosecution is not possible at present, as the inspection is carried on under an ordinance of the Board of Health and not under a city by-law. Two practical bakers inspect bake-shops and candy kitchens and investigate the weight of bread loaves exposed for sale.

All citizens' complaints of nuisances pass through the hands of the head of the division, who also conducts all Police Court work of the Department of Public Health.

When not engaged in investigating complaints, the general sanitary inspectors are kept very busy in a house-to-house sanitary inspection of premises.

Co-operation With Other Divisions.

The Division of Health Nurses report from time to time any unsanitary conditions of which it learns in the course of its work. These are handled in the same way as complaints from citizens.

Other divisions have a similar relation to the Division of Sanitation.

Divisional Organization.

There are 28 full-time employees of the division, as follows:

Chief of division; deputy chief; 17 general sanitary inspectors, each caring for one district; 2 special sanitary inspectors for police court work; 2 bake-shop inspectors; 3 restaurant inspectors; 2 men who serve notices.

The deputy chief makes all assignments, a record of which is kept in a day-book, and which are made up from the complaint book.

The time of each inspection is recorded on the inspectors' daily reports. These could be made the basis of functional cost accounting if the accounts of the department were so kept.

The inspectors report daily on their assignments and other work. Monthly and yearly reports are made to the Medical Officer of Health.

Frequently, and as a matter of definitely arranged routine, the inspectors of this

division do inspection work for the Division of Housing and Industrial Hygiene. In fact, they are field agents for the Division of Housing and Industrial Hygiene as far as the inspection of general hygienic conditions in dwelling houses is concerned. This relation is similar to the relation between the Public Service and Child Hygiene Divisions and the Division of Public Health Nurses—a relation which has worked to such advantage.

The division makes systematic inspections of sanitary conditions in dwellings hotels, barber shops, laundries, livery stables, cess-pools (the few remaining), restaurants, candy shops, bake-shops.

Bake-shops, restaurants, candy shops and laundries are inspected monthly as nearly as possible. The territories of the various district inspectors are supposed to be covered three or four times a year.

Inspections of churches, parks and railway terminals are made only on complaint. Municipal buildings and public comfort stations, being under the control of the Property Department, are not inspected except on complaint. It would appear that public comfort stations at least should be regularly inspected by the sanitary division of the Department of Public Health.

The division does not use score cards. The wonderful results obtained by the use of score cards of dairies, creameries, etc., by the Division of Laboratories would indicate that their use at least for barber shops, laundries, livery stables, restaurants and candy shops, would be of extreme practical value both in its effect on the inspector and on the proprietors whose places are inspected.

Licenses for laundries, restaurants, second-hand shops and livery stables are not issued by the city until after a permit has been issued by the Medical Officer of Health on advice of the sanitary division.

Licenses are not issued to lodging houses, barber shops, hotels (except by the Province as to liquor), bakeries and candy shops. These should be controlled through licenses issued after permits are received from the Department of Public Health. Fees need not be charged, in fact, no revenue should be collected from this source, as the licenses would be issued merely for the protection of the public.

The forms used in the office and inspection routine are very full, giving practi-

cally all the information which could ordinarily be desired. Considerable time, however, in filling them out could be saved by the use of "keys," symbols and check marks which would obviate the necessity of many long-hand entries. The statistician could give invaluable aid along this line, if he were given adequate assistance in the routine details of his office.

The thorough follow-up work of the division is well described in the words of its chief, as follows:—

"All complaints made by inspectors are treated in the same way as citizens' complaints; the inspector having investigated the matter, gives the occupants verbal notice of any conditions for which they are responsible; if the owner or agent is responsible, a written notice is sent, giving them a specified time to abate the nuisance; if the matter is urgent, twenty-four (24) hours is given, and in other cases, the time may extend to seven (7) days. This notice is delivered by an employee of the department, and a record of the service kept, so that it may be proven in case of dispute.

"At the end of the allotted time, the premises are re-inspected, if no abatement has been made, a second notice is given that if work is not done within three to five days, as the case may be, a summons will be issued. If the matter has not been attended to when re-inspected, and no sufficient reason given for delay, a summons is issued. When the case is called in court, the defendant usually asks for a reasonable remand to have the work done, and this is acceded to, except in extraordinary cases. A re-inspection is made, during the forenoon of the day on which the case is again called, and if satisfactory, the matter is withdrawn from court, or adjourned until called on for sentence; but if nothing has been done and no satisfactory reason given for the delay, the case is vigorously prosecuted, and generally a conviction obtained.

"After a conviction has been made, the offender is again notified to abate the nuisance, within (at the most) three days, and if not then satisfactory, the matter is again brought into court.

"In order that the work of the district inspectors may not be interfered with, by their having to attend court to give evidence, the work of inspection for police court purposes has been assigned to two

reliable and experienced men. These inspectors also attend to any important or complicated matters where experience and good judgment is required."

The volume of the work of the division is indicated by the fact that 25,054 complaints were investigated during the years 1911, 1912, and 1913,—11,128 of these in the last year.

Office Accommodation.

The division occupies desk room for two, in one of the rooms in the general office. The desks are occupied by the chief and his deputy. The 26 inspectors, when at the office, stand outside the counter and in the corridor until called in by the chief. The result, in spite of all that can be done, is an appearance of general disorder and a congestion in and around the general office during certain periods which makes efficient work by those not directly concerned very difficult. There certainly should be a waiting room for inspectors, not only for their own sake but for the convenience of the public.

The room in which the chiefs of three divisions and a general clerical staff of seven men are accommodated has an area over all of 528 square feet. Inside the rail the area is 368. Of this, the area unoccupied by furniture is 250 square feet. This space is, of course, entirely inadequate and is not more than sufficient for the Division of Sanitation alone. The ratio of window to floor space is 1 to 9.5, which does not give over half the natural light required. Allowing deduction for furniture, there are only 275 cubic feet of air space and 25 square feet of floor space for each permanent occupant. When the space outside the counter is occupied by perhaps 50 inspectors and others, the conditions are easily imagined.

A space sufficient for two long tables to accommodate 20 inspectors is badly needed, as well as facilities for hanging up outer garments.

General Recommendations.

It is recommended that the Divisions of Sanitation and Housing and Industrial Hygiene be merged. As already pointed out the district inspectors do field work for both divisions. It is neither necessary nor desirable that the work of the special inspectors attached to either division be disturbed. There is, however, a great administrative advantage in having as many in-

spectors as possible under the same head even where this is not made necessary by divided authority. All assignments for inspection of nuisances and housing and factory inspection might well come from one man, although the importance of housing and industrial hygiene might well justify a bureau under a general Division of Sanitation, Housing and Industrial Hygiene. At least the office routine and records would be considerably simplified and better controlled.

The inspectors of bake-shops and restaurants, now that the sanitary idea has been thoroughly inculcated, might well be transferred to the Division of Food Inspection where they logically belong. A consolidation of food and meat or slaughter-house inspection, together with the transfer suggested, should greatly increase efficiency.

DIVISION OF HOUSING AND INDUSTRIAL HYGIENE.

What It is.

This division is the organization of the Department of Public Health which protects the public against conditions inimical to health, in dwellings, public buildings and factories.

What It Does.

The division is particularly interested in securing adequate lighting and ventilation. It condemns dwellings unfit for habitation, including cellar dwellings, and closes up dark rooms used as living or sleeping quarters.

While there are Provincial inspectors of factories, yet the Medical Officer of Health is responsible for conditions in the municipality. Through his inspectors he may visit any factory and enforce correction of unsanitary conditions. He may even close factories. He may and does, through his division, condemn dwelling houses and affix placards notifying the public of condemnation. He may also close lodging houses.

One of the most remarkable achievements of the division has been the reduction, since 1912, in the number of yard privies from 17,181 to 4,890 (December, 1914).

Office Organization.

The division has eight employees. One does housing inspection and assists the head of the division with industrial hy-

giene inspection. One confines his attention to lodging house work and one does general inspection. Four women comprise the section on municipal housekeeping. The work of this section in educating foreign mothers in domestic art is of the most practical and helpful nature.

All assignments are made by the director. There are no regular assignment forms. Inspectors report daily time they begin and time they finish field work. These reports could be sufficiently detailed to serve as a basis for functional cost accounting.

The division makes reports monthly to the Medical Officer of Health.

Detailed report forms are used for apartment houses, public buildings and factories. (These are not in score card form.) A trial should be made of score cards for all these and for lodging houses and dwellings. The results of these scores should at least be open to the public. The question naturally arises here whether the publication of "white" lists might not be advisable in some cases.

Co-operation With Other Divisions.

With the Division of Sanitation the Division of Housing and Industrial Hygiene works in the closest co-operation. As pointed out elsewhere, the district inspectors of the Division of Sanitation act regularly as field agents of the Division of Housing and Industrial Hygiene.

Co-operation with the Division of Health Nurses is also close. The head of the section of municipal housekeeping each morning receives by telephone from the Health Nurses Division all complaints which have come to their attention during the preceding day and which should be looked into by the municipal housekeepers.

Cases are frequently reported to the Division of Public Service and less frequently to the Division of Plumbing and Drainage.

Office Accommodation.

The division occupies a desk in the same room as that occupied by the Division of Sanitation. It also has the use of a table in the store room. The conditions of lighting, ventilation and general office accommodation are exactly the same as those described in the report on the Division of Sanitation and need no further description. The division needs more desk room and at least 150 square feet of floor space.

The chief of the division, if supplied with more clerical help, could do more field work himself.

General Recommendations.

A merging of the Divisions of Sanitation and Housing and Industrial Hygiene would lessen the number of division heads by one. This is always desirable from the standpoint of the chief administrator. It would cut out waste motion in administration, would simplify the keeping of records and would further centralize the giving of assignments. This could be done without destroying the present amount of specialization in inspection. The Division of Housing and Industrial Hygiene could, if necessary, be made a section or bureau of a Division of Sanitation, Housing and Industrial Hygiene.

DIVISION OF PLUMBING AND DRAINAGE.

What It Does.

The division inspects and passes upon all new plumbing and drainage and all repairs to old plumbing and drainage. Before any new construction or alterations can be made, a permit must be obtained from the Health Department. This cannot be issued until plans are submitted. These plans are carefully kept on file in a vault in such a fashion as to be readily available for consultation. After permits are issued the work is inspected by the Division of Plumbing and Drainage which must be satisfied before the equipment can be used. The division in contradistinction to the other divisions of the Department of Public Health is for the technical inspection of construction. Its work is more allied to the inspection work of the City Architect's Department than to that of the other divisions of the Department of Public Health.

Organization of the Division.

The employees number 19: the head of the division, four office assistants and fourteen inspectors. The head of the division makes all assignments. Individual assignments are made out for each inspection. Daily each district inspector gets his batch of assignments as to which he must report.

In this division inspectors report daily between 1.30 and 2. By having reports at noon hour the inspectors can start work as early in the morning and stay in the field as late as they wish. This is particularly

the case in the summer time when inspectors frequently commence work at eight o'clock in the morning. If they conformed to the office hours of 9 to 5, and reported at nine o'clock, there would be considerable time wasted, particularly in the case of the men working in the outlying districts.

Time of making inspections is not entered on the daily report. This is not so necessary as in most divisions, as the division has but one main function. It might be desirable, however, to differentiate between the costs of inspection of old and new construction. In this case time sheets could be made the basis of computing functional costs by the accounting division.

The work of the division is well organized and the office routine is in good shape notwithstanding the inadequate quarters. The follow-up work is businesslike and the division of work among employees is clearly defined.

Co-operation With Other Divisions.

The Divisions of Sanitation and Plumbing and Drainage frequently interchange reports as to conditions observed in regular inspections. Opportunities for co-operation with other divisions are rare.

Office Accommodation.

The cubic air space per employee is adequate except when the inspectors of this or other divisions are present. Then conditions are similar to those described in the Division of Sanitation. The natural lighting is entirely inadequate. There is but one window situated at one end of a room nearly 44 feet long. The ratio of window to floor space, including the area outside the counter, is only 1 to 23. Artificial lighting is in constant use. The air in the division at certain hours of the day is so bad that there is a distinct odor. The small register in the corner near entrance is entirely inadequate.

The floor space is fairly adequate except when inspectors are present. Then it is entirely inadequate. If the room occupied by the division were used for its work alone the space might be almost or quite sufficient.

General Recommendations.

A situation involving rather serious inconvenience to uninstructed purchasers of

property is thus described by the chief of the division:

"On many occasions recently houses have been sold and resold, sometimes before completion of building. Purchasers (or their legal advisers) do not take precaution to get certificate from Health Department that smoke-test has been made and that plumbing installation is satisfactory. Last purchaser has released previous owners (including applicant for permit to install plumbing) from responsibility as to plumbing, with the result that when plumbing is not satisfactory to the Health Department the present owner is obliged to pay the cost of putting same in condition satisfactory to the Health Department. Department has no power to fix responsibility on original applicant. Department has tried to impress upon people, through the Health Bulletin, the advisability of getting Health Department certificate as to plumbing, but little attention has been paid to this warning."

The extensive use of newspaper publicity and, if possible, the co-operation of civics classes in the public schools might do much to remedy the difficulty.

Any form of organization that works well need not be the cause of any great worry on account of theoretical objections. Logically this Division of Plumbing and Drainage, being essentially concerned with construction, should be an integral part of the City Architect's Department. It is essential, however, that an experienced and thoroughly competent official, acquainted with the latest plumbing and drainage practice, should be retained on the staff of the Department of Public Health. The chief of the division would be the natural choice. He could pass on all plans, and send them back with his O.K. or the reverse, to the Architect's Department. This would obviate the necessity of storing plans in the Health Department, as all plans would be kept together in the City Architect's Department. The arrangement would provide all the safeguards of the present arrangements.

It is true that the work of the division is a health function. But so is the heating, ventilation and lighting work of the City Architect's Department. It would certainly be unwise to transfer these functions to the Health Department, as they involve fundamentally problems of con-

struction and are best performed by a department whose main function is the supervision of construction of various sorts.

SECRETARY OF HEALTH.

What He Does.

The Secretary of Health acts as a buffer to protect the time of the Medical Officer of Health against trivial calls upon it. He also has direct charge of health education through publicity and publishes the monthly report and monthly bulletin. At present he has control of the publication of a quadrennial report, the annual report of the Department not having been issued for four years pending thorough reorganization.

The secretary also keeps the order book of the Department. This is of recent introduction and controls orders as to nature and quantity. No order is issued save on requisition countersigned by the divisional head concerned.* To serve as a basis for accounting, the cost of each order should be stated. As it is, entries cannot be made in the accounts of the Department until the bills come in. The Secretary as yet has not control of issue of supplies from the general stock room, although a card record suitable for the purpose has been ready for use for some time.

The health nurses, the laboratories, the Isolation Hospital and dental clinics have stock rooms separate from the general stock room. The Isolation Hospital and the Division of Health Nurses have independent control of the issue of supplies from their respective stock rooms. The Division of Laboratories takes annual inventories previous to making up its estimates. Even if all divisions had adequate independent control of supplies, until this control is unified in some way there can be no effective check by the Department. As a matter of fact, the secretary is not in a position to report to the accounting division the unused balance in stock at any time. Neither have inventories been taken hitherto, although one is projected for this year. Of course, cost accounting is impossible without accounting control of the stock-rooms.

A very important part of the work of the Secretary of Health is to keep the service record cards and the record of absences. The former, with certain modifications, should (in time) form an adequate basis

for departmental promotion. The latter will enable the Accounting Division to state the cost to the Department of absence through sickness and other causes. All employees absent on account of illness are visited and reported on by the diagnostician within 24 hours.

Needs of the Secretary.

The secretary occupies the same room as that which houses the Division of Public Service. As many as five or six people may be in the room at one time. Privacy is impossible and consecutive thought difficult at most times. When only the employees of the division are present, the secretary has not over 65 square feet of floor space for himself and furniture. He must sit with the light of the window at his back† and must use artificial light most of the time. He is situated at some distance from the office of the Medical Officer of Health and hence is unable to perform some of the important functions of a secretary.

The Bureau recommends:

1. That all the records of the Department, except those of the Laboratories and Isolation Hospital, be centralized and placed in the charge of a filing clerk directly responsible to the secretary.

2. That the secretary be provided with a small private office.

3. That the chief functions of the secretary be the management of health education through publicity and the saving of the time of the Medical Officer of Health by dealing with details which should rarely, if ever, be obtruded on the head of the department.

The Secretary of Health is a comparatively new official and his office is still in the formative period. With proper assistance and office accommodation he can do even more than he already has to increase departmental efficiency.

DIVISION OF ACCOUNTING.

What It Is and Does.

The chief function of an accounting division in a city department is to supply the information necessary for administrative control as to cost and amount of work done. The three most necessary kinds of information required are:

1. The state of the appropriation.
2. The cost of classified objects of expenditure.

*A duplicate requisition system has been installed since writing the above. This may be used as a check on the order book.

†Since writing the above his desk has been moved so as to bring what natural light there is over the writer's left shoulder. Artificial light, however, is still necessary all day.

3. The cost of each function of the department, arrived at by the distribution of costs of objects of expenditure among the different functions.

The chief book kept by the division is the Appropriation Ledger, called in the division the general ledger. This gives the essential information as to the unspent balance of appropriations. It also distributes expenditures under various heads which mostly represent objects of expenditure, but in some cases represent functions. Thus the information given covers neither objects of expenditure nor functional costs. To be accurate and give significant information, classification of expenditures according to object of expenditure and according to function must be kept entirely distinct. The same expenditures are concerned; but the information to be produced is quite distinct.

The classification of accounts which appears in the appropriation ledger is as follows:

Salaries—Permanent, Temporary.
 Water (refunded by Works Dept.).
 Sewage (refunded by Works Dept.).
 Car tickets.
 Printing.
 Stationery.
 Blank books.
 Petty cash.
 Telephone.
 Postage.
 Cartage.
 Tuberculosis—Supplies.
 Typewriting supplies.
 Horse boarding and shoeing.
 Travelling expenses.
 Technical books.
 Sundries.
 Smoke-test supplies.
 Child welfare.
 Laboratory—Maintenance, Equipment.
 Dairy transportation expenses.
 Ambulance.
 Morgue.
 Formaline.
 Uniforms.
 Water Purification—Supplies.
 Advertising.
 Vaccine.
 Sewage salaries refunded.

Quarantine—Scarlet Fever and Diphtheria.

Dental Clinics—Salaries, Sundries.

It is evident, of course, that this is not good practice as objects of expenditure, such as typewriting supplies and uniforms, are inextricably mixed up with functional (kind of work) heading, such as Dental Clinics, Child Welfare, Ambulance, etc. Some of the functional headings, such as Child Welfare, are misnomers. It is impossible to tell from the books what Child Welfare costs, if for no other reason, because the salaries of the health nurses are not distributed according to time spent on child welfare, time spent on tuberculosis, etc.

As a matter of fact, no books in the Accounting Division show the cost of maintaining each of the various divisions, much less the cost of the individual functions of each division. In some cases functional costs may be worked out approximately; but until the distribution of supplies is under the control of the Accounting Division and until time sheets are used for those employes at least who have diversified functions, real cost accounting will be impossible in the division.

The next most important book to the Appropriation Ledger is the "Record of Invoices." This has been in use since November, 1913, and was found necessary in order to prevent payment of duplicate bills. As will be pointed out later, there are defects in the method of checking bills, yet, on the whole, this book represents a great advance over the practice of a year ago.

From time to time inquiries as to the costs of various functions came into the Accounting Division involving a great deal of work in searching out items not found together in any book of the division. Frequently the same items had to be picked out time after time in answering inquiries for similar information, but covering longer periods in some cases than others. As a result of these inquiries the Accounting Division began to use the "Records of Invoices" book as a so-called "Analysis Book." The result has been helpful so far as it has gone, but the analysis is carried out for only

a very limited number of functions, and can never be completely accurate for the reasons mentioned above.

The accounts distributed according to functions are as follows:

- The Bell Telephone Co.
- The Hydro-Electric System.
- The Laboratory.
- The Morgue.
- The Ambulances.
- Water.

The system of checking accounts, particularly hospital accounts is defective. Bills from the Toronto General Hospital, St. Michael's Hospital, Western Hospital, Hillcrest Convalescent Home, St. John's Hospital and the Hospital for Sick Children are checked against the hospital registration and stubs of orders for admission. As soon as an account is received from the hospital the discharges are entered in the Register or Hospital Account Book to prevent duplication of bills. Then the account is checked with the order stub to see whether dates of admission and patients' names tally with the stub. Totals are then checked and passed for payment. The only apparent source of error here would be the possibility of admission not occurring for some time after the issuance of the order. Then the tallying of the account with the stub would not cover such an error.

There is apparently practically no check on bills from the Home for Incurables. In itself this is not serious, as the bills are very small and there have been no recent admissions.

Bills from the Gravenhurst Sanitarium, the Weston Sanitarium, Queen Alexandra Sanitarium and the Hospital for Sick Children are checked as to date of admission by the Health Nurses Division as it issues orders for admissions to these institutions. The Accounting Division itself does not check these accounts.

In addition to the books mentioned the following books of account and memorandum are kept: Petty Cash Book, Salary Book for central office, Salary Book for Isolation and Smallpox Hospitals, Laboratory Ledger (for culture station work), and a Fee and Expense Ledger, so called, in which account is kept of all moneys received by the department pre-

vious to sending them to the City Treasurer.

In fine, the accounting procedure of the division can hardly be called a system. It has grown up in rather a haphazard way as urgent need for additional information appeared, with a resulting lack of co-ordination.

Divisional Organization.

The division has two employes whose salaries amount jointly to \$1,900. They pass upon bills, salary rolls, etc., amounting annually to about \$575,000. While it is quite possible that two men could do the work efficiently if the work were properly organized, the question might be raised whether, in the interest of economy, it is wise to pay only \$1,100 to a man holding an extremely responsible accounting position.

Office Accommodation

The Accounting Division occupies a floor space of about 55 square feet, which allows about 27½ square feet per employe, or a space about 5¼ feet square. Adjoining the accounting tables on one side is a tabulating machine, the noise from which when in operation is almost unbearable. Speech is impossible and consecutive thought is difficult. It is hard to see how a man could get the same result from two additions of the same column of figures. On the other side is a printing machine, which is not so noisy, but the odor of which is more or less offensive.* The division is working under a tremendous handicap. The division certainly needs a quiet, well-lighted room separate from other divisions and having an area of at least 200 square feet.

SUMMARY OF FINDINGS.

The Department of Public Health is in a state of transition. A report which might be accurate this month would be inaccurate the next. Like a growing organism it is continually striving to adjust itself to a changing environment, which is rapidly becoming more complex. Its problem has been complicated by the necessity of catching up to present needs—a necessity due to the rapid growth of the city which was paralleled by no corresponding growth in the Department of Public Health. These facts should be borne in mind when considering the con-

*Since writing the above the printing machine has been moved upstairs and arrangements are being made to have the tabulating machine moved as well.

structive criticisms embodied in the report.

The esprit de corps of the staff is excellent.

The inter-divisional co-operation is effective and measures are being taken to extend it.

The co-operation of the department with citizens' agencies and other city departments is far reaching and effective. It has been the result of hard work extending over a period of years and bids fair to make Toronto the best example of what can be done in the conservation of human energy through co-operative effort. From a purely monetary standpoint the co-operative activities of the department have saved large sums for Toronto taxpayers.

The monthly report issued by the department is invaluable. With the reorganization of the accounting system, monthly expenditure statements can be included. The educational work, represented by the monthly bulletin and the various pamphlets issued by the department, is having effects which will be apparent fully only with the rising generation.

The quarters occupied by the department are inadequate, rendering 100 per cent. efficiency impossible, even if all other conditions were favorable. One division has no desk room. Five others are crowded into a space hardly more than enough for one. Two divisions are under serious handicap from noise. Artificial lighting must be resorted to almost continuously in some offices. The conditions of ventilation are extremely bad in two offices to which the public are admitted. The floor space per employee falls as low as 27½ square feet and even lower in some cases. The accommodations of the Morgue and Ambulance Division are ample and of the Laboratories and Hospital Division fairly adequate.

The vital statistics and the population statistics available to the department are inadequate for its purposes. These supply the only certain yardstick for self-measurement by the department and are a sine qua non of effective departmental control.

The Accounting Division is entirely inadequate. Accurate monthly, quarterly

and yearly statements of divisional and functional costs are not and cannot be made under the present system. Time sheets are not used for accounting purposes, and the Accounting Division has no accounting control, direct or indirect, of the five supply and stock rooms of the department. The method of checking accounts is inadequate, although considerable improvements have been effected during the last year.* The conditions as to space, lighting, ventilation, quietness and privacy are so bad that the routine work of accounting is rendered very difficult and sometimes almost impossible.

Insufficient use is made of the medical and veterinary services of the department by other city departments.

The records used by the department as a rule call for the information most necessary. The mechanical details and arrangement might be considerably improved in some cases. Until quite recently, owing to the rapid growth of the department, the records have grown up without any particular co-ordination in the absence of any effective departmental control of record forms. The time of the statistician is so taken up with other things that his advice as to forms and statistical procedure has not been available for divisional heads. The department is fully alive to the necessity of adequate and easily handled records and with centralization of records under expert advice any defects will rapidly disappear. The medical health nurses are health nurses, the physicians are physicians, not experts on records. The various divisional heads know what they want their records to show, but they should have the services of a specialist on devising forms of records and methods of filing.

The department has 19 officers directly responsible to the Medical Officer of Health. This number is too large. It makes too much demand upon the very valuable time of the Medical Officer of Health, which should be spent largely in striking out new lines of action and in controlling the larger activities of the department.

During the period of rapid development the present arrangement was perhaps the best, as it enabled the Medical

*These conditions, as intimated in the body of the reports, are in the process of correction.

Officer of Health to keep in touch with the slightest details at a time when a mistake might be fraught with serious consequences. At present, however, not more than eight main divisions are necessary, the various activities of the department being grouped under them as bureaus. For example, the six different kinds of inspectors might well be merged under three divisions.

SUMMARY OF RECOMMENDATIONS.

The Bureau of Municipal Research makes the following recommendations and suggestions:

1. Adequate space should be provided for the Department of Public Health forthwith, even if offices for some other departments or organizations have to be rented outside of City Hall. It is further recommended that the space provided be in one block as far as possible. On account of the necessity of the public having easy access to divisions responsible for issuing permits, the first floor is undoubtedly the best place for the department. As public health offices should be a model to other offices, they should conform to the standards of lighting, ventilation, floor space, cubic feet of air per employee, etc., which the department advocates or enforces in its dealings with the public.

2. Co-operative arrangements should be effected between the Police Department and the Department of Public Health for an annual census by districts, ages, sex and racial origin.

3. A strong effort should be made in co-operation with the Provincial authorities, who are legally charged with the enforcement of the birth registration law, to secure the registration of every birth within twenty-four hours.

4. A provincial statute transferring the registration of births to the Department of Public Health in cities of over 75,000 population and giving such local department at the same time summary power to enforce the law, would greatly aid in the effectiveness of infant welfare work. Birth statistics are of comparatively little use after the fact. Birth statistics always "on tap" mean more live and healthy babies and fewer funerals in Toronto. The Department of Public

Health should send duplicate notices to the City Clerk. A delay of a few hours under such an arrangement could have no serious consequences.

5. The Accounting Division should be provided at once with adequate quarters and should instal immediately a modern system of accounts which would produce, as a matter of routine, divisional and functional costs. To this end uniform accounting control would have to be established over supplies, and time sheets would be necessary for all employees who have more than one function to perform.* A better system of checking accounts, particularly some hospital accounts, is also required. In order that the system adopted should conform to that recommended by the City Auditor, it should be installed in co-operation with the City Auditor's Department.

6. The medical and veterinary work of all city departments should be turned over by by-law to the Department of Public Health, and the department should be strengthened so as to be able to handle the work effectively.

7. The clerical and stenographic work of the department should be centralized under a chief clerk responsible directly to the Secretary of Health. A Bureau of Records should be established under a record clerk directly responsible to the chief clerk. The record clerk should be skilled in drawing up records and reports and in filing, and should always act in co-operation with the statistician.

8. The divisions of the department should be cut down in number, related divisions being merged. Where necessary subsidiary bureaus with directors responsible to the divisional heads might be substituted for independent divisions. Thus the medical men might be combined in one division, or at least located in the same office, so that co-operation would be most easy and effective. Food inspection and meat inspection might be merged in a Division of Food and Slaughterhouse Inspection, under a veterinary surgeon. Sanitary Inspection and Housing and Industrial Hygiene Inspection might be merged into a Division of Sanitation with Housing Inspection as a subsidiary bureau. Such an arrangement

*The use of time sheets has been decided upon.

would increase professional supervision and would greatly facilitate the economic use of the time of the Medical Officer of Health.

9. As suggested above, the work of the Diagnostician, the Child Hygiene Division, and the Inspector of Maternity and Baby Homes, which provide medical services, should either be incorporated into a medical division or located in the same or communicating offices. The relations between the Diagnostician and the Division of Communicable Diseases and Quarantine are so close that his division might well be made a Bureau of the Medical Division if one were created. The Division of Dental Clinics should also be associated very closely with any Medical Division which might be established.

If possible all medical officers should be placed on a full time basis. The Director of Child Hygiene, who at present has no office and insufficient assistance, should be supplied immediately with adequate accommodation and office help.

10. Extra space for storing the supplies now lying unprotected in the attic should be furnished to the Division of Laboratories.

11. The Division of Vital Statistics should be made a Division of Statistics. The head of this division should be the professional advisor of all divisional heads on the use of statistics, the drawing up of forms of record and report. No statistics should be published until he has revised them.

12. The superintendent of hospitals should be made responsible for the conduct of the Isolation Hospitals in all respects. Clearly defined nursing, house-keeping and accounting sections should be established, with heads directly re-

sponsible to the superintendent. The system of records should be overhauled with the co-operation of the statistician and the accounting with the co-operation of the Accounting Division and the City Auditor.

13. A study should be made to determine whether it is possible to cut down still further the time given to clerical work by the health nurses. The "Summary Book" should be kept so as to show the balance of card records of each kind each day. The book at the central office being intended only for control should not be so detailed as the similar books kept at the district offices.

14. The Division of Public Service should be greatly strengthened. In the long run a thoroughly efficient Division of Public Service is second in importance to none in the department. Proper family conditions are indispensable to proper health conditions. The Division of Public Service by combatting disease and impaired vitality at their source in the homes of insufficiently fed and clothed families is cutting off the recruits of the army of inefficients and making it possible for the department to make real headway. Real progress is impossible if for every child rescued for efficient citizenship two derelicts take its place.

15. The number of food and meat inspectors should be increased.

16. The use of score cards in inspection should be developed in all inspection divisions in the same way as in the Division of Laboratories. The report cards now used could be readily adapted for scoring apartment houses, factories, meat shops, barber shops, slaughter houses, etc. The use of white lists, similar to those used for dairies, might be considered as a possible aid to the department and protection to the public.

PASTEURIZATION OF MILK

By JOSEPH RACE

City Bacteriologist, Ottawa

THE principle of the process of pasteurization of milk needs no explanation, but the author wishes it to be remembered that the results given in this paper refer only to the 30 minutes holding method at 145 degrees F., and not to the "flash" methods which are in use in many plants, but which it is satisfactory to note, are gradually being eliminated. It is a regrettable fact that not only the general public but even scientific men are divided in their opinions regarding the merits and demerits of pasteurization and it was this fact that led the writer to repeat some of the previous work on this subject with a view to ascertaining what were the actual facts under the conditions obtaining in Ottawa.

Before considering the more recent evidence on the various changes produced by pasteurization it is proposed to briefly review the arguments for and against this process.

ADVANTAGES CLAIMED.

When the ease with which milk may become infected and the excellent pabulum it presents for multiplication of bacteria are considered, it is obvious that the destruction of pathogenic organisms is the principal advantage claimed for pasteurization. Milk has been proved on many occasions to be the vehicle for the transfer of *B. tuberculosis*, *B. typhi*, *B. diphtheriae*, *B. dysentery* and streptococci producing septic sore throat, and although these causative agents can be largely eliminated by careful veterinary inspection and supervision, the magnitude of the problem precludes the possibility of giving a definite assurance of their absence. Although the inspection of the 400 producers supplying the City of Ottawa is simple compared with the 40,000 for New York, it is obvious that they cannot be supervised in the manner necessary to give this assurance, except at an exorbitant cost.

The frequency of pathogenic germs in milk is considerable; in many countries 8 to

10 per cent. of all market samples of milk contain tuberculosis virulent to guinea pigs, and of the 650 epidemics of typhoid recorded by Schuder 110 were caused by milk. Applying a comparatively low rate of typhoid incidence about 4 cases may be expected amongst the dairy farms supplying Ottawa and these may follow their usual occupation for several days before their condition is recognized and precautions can be taken. Ambulatory cases are a further source of danger.

Numerous epidemics of scarlet fever and diphtheria have been traced to milk and in recent years epidemics of septic sore throat have also been attributed to this cause.

Several medical men of the highest reputation claim that the use of pasteurized milk has led to decrease in the infantile death rate due to intestinal disturbances, and that this decrease is due more to a reduction of the total bacteria than to any particular group.

Improved keeping qualities are also claimed.

OBJECTIONS TO PASTEURIZATION*

One of the most serious objections to pasteurized milk is that it is believed to putrefy rather than sour, due to the destruction of lactic acid bacteria which produce acid in raw milk. The destruction of the acid bacteria is believed to result in the unretarded development of undesirable organisms which may produce toxins. This view was first put forward by Flugge who demonstrated the presence of spore forming peptonizing bacteria in milk after being held at 158 degrees F. (70 degrees C.) for 30 minutes and which developed and produced toxic substances. Weber, however, found only three of these types of bacteria during an examination of 150 samples of pasteurized milk. Farrington and Russell state that in numerous experiments they have found the thermal death point of the lactic acid bacteria to be from 57 to 60 degrees C. (135 to 140 degrees F.) on exposure for 10 minutes. Russell and Hast-

*In the preparation of this section of the paper free use was made of the bulletins of the U. S. A. Department of Agriculture, and the author takes this opportunity of acknowledging his indebtedness to these excellent publications for some of the information used.

ings in their text-book on Agricultural Bacteriology, state that: "The lactic acid bacteria do not form spores and hence are easily killed if milk is heated. If milk is pasteurized and, subsequently, kept free from lactic bacteria it will not sour but will putrefy, due to the development of the spores not killed by the heating. Frequently it does not curdle for a long time. One of the dangers in the use of pasteurized milk is the fact that the consumer has no way of telling how old it is. It may appear normal in every way and yet be harmful to the health."

Revis, in a discussion of a paper by Kenwood, makes the statement that raw milk never putrefies, pasteurized milk always does. Lederle believes that with the destruction of the ordinary lactic acid bacteria, which constitute the danger signal of old milk, the souring process is interfered with, and that more serious changes may take place without the knowledge of the consumer. Freudenreich points out the danger of allowing pasteurized milk to stand at high temperatures, due to the growth of spores of the hay and potato bacilli which are not killed during pasteurization. Jensen considers that the use of temperatures suitable to kill bacillus tuberculosis destroys also the lactic acid bacteria, which, under normal conditions in raw milk, prevent undesirable fermentations. In consequence the commercially pasteurized milk becomes more dangerous than raw milk. He believes that the degree of acidity of raw milk indicates its freshness, while the most dangerous alterations in pasteurized milk are not visible microscopically and escape those who control its consumption.

Reckards states, "Pasteurized milk seems to keep longer, but eventually acquires a strong odor, and really may be said to decompose rather than sour. In nearly every instance we found that pasteurized milk, even when heavily loaded with bacteria did not decompose until after the non-pasteurized milk taken at the same time had curdled. That such milk is unfit for food, especially for babies, goes without saying."

In connection with this objection to pasteurization, Harrington in a discussion of a paper by Rotch, states, "Again, it will make possible the carrying along of milk until, although not sour it may become

more or less poisonous." "I believe that dirty milk should be allowed to stay dirty, so that it will sour more quickly, rather than that the lactic acid ferments shall be destroyed and the commercial life of the milk prolonged, thus permitting those organisms which are not affected by heat and which are believed to elaborate toxic substances to go on making the milk dangerous."

Another objection to pasteurization is brought out by Pennington and McClintock who ask this question: "When milk before pasteurization shows a count of over 1,000,000 is it desirable to permit in a food the toxins and products of metabolism of those generations of organisms, even though they themselves may be reduced to a very few hundred thousand at the expense frequently of milk enzymes and probably other substances closely connected with its food value and keeping qualities?"

Rotch expresses the same sentiment when he says: "It is a fact that certain organisms are killed by pasteurization, but we cannot kill the toxins of these organisms by heat. Simply pasteurizing and sterilizing will still allow the milk to contain elements which are exceedingly dangerous to those who drink it, and especially where young infants are concerned."

An objection to pasteurization which has been frequently stated, is the partial or total destruction of the "life" or enzymes contained in raw milk during the heating process.

Some object to pasteurized milk on account of the careless methods of handling after pasteurization. Pennington and McClintock believe that from the quantitative count alone it would scarcely be worth while to pasteurize milk of fair quality, since the contamination acquired in bottling is very often sufficient to overbalance the original germ content of the milk.

It is greatly feared by some that the adoption of pasteurization will interfere with the extension of sanitary supervision. Harrington expressed this view in the following words: "Pasteurization will put back improvements on the source of supply and will encourage dirty habits, the farmer understanding that it is not necessary to be so particular since the dirt that gets in is going to be cooked and made harmless."

Another serious objection is that un-

scrupulous dealers may repasteurize their milk or pasteurize an old milk which ordinarily would not be marketable.

It is often also stated that bacteria increases more rapidly in pasteurized milk than in raw milk, and that in view of the possibility of infection, the accelerated growth presents a serious objection. St. John and Pennington (Journal of Infectious Diseases) have shown in a few experiments that a more rapid increase in bacterial growth takes place in reinfected pasteurized milk than in raw milk. Their conclusions are based on the ratio of increase. Rickards (Boston), working on commercially pasteurized milk, concludes that on the average, bacteria will increase four times as fast in pasteurized milk as in raw milk when kept for 24 hours at the temperature of the ice box. His conclusions are based on the following ratios of increase:

	Unpasteurized Milk Average Count	Pasteurized Milk Average Count
Original	1,087,000	44,000
After 24 hours in ice box	22,617,000	3,691,000
Percentage increase . .	2,100	8,400
Ratio of increase . . .	1	4
Number of samples, 87.		

The change in the chemical constituents of milk produced by heat is sometimes the basis of objection to pasteurized milk and associated with this is the statement that rickets and scurvy can be attributed to this cause.

These objections sound very formidable and it must be acknowledged that even if only a few of them had any foundation on fact, the present system of commercial pasteurization must be regarded as deleterious and consequently abandoned.

In considering these objections it will perhaps facilitate matters if they are divided into groups, even though the method of grouping be somewhat arbitrary and empirical. The objections fall into two main groups (1) the *a priori* or those conditional upon bacteriological, biochemical and chemical examinations of the heated product, and (2) the *a posteriori* or clinical observations of the results, produced "in vivo." These will be discussed seriatim.

Bacteriological.—Probably the most serious statement made against pasteurization is that during the heating process, the lac-

tic acid bacteria, which in raw milk keep the putrefactive bacteria in check, are destroyed with the result that pasteurized milk putrefies and decomposes instead of souring.

During the last few years this phase of the problem has been the subject of a very considerable amount of experimental work in the Dairy Division of the United States Department of Agriculture and the results briefly stated, are to the effect that pasteurization of milk for 30 minutes at 145 degrees F. reduces the total number of bacteria of all kinds, but increases the relative proportion of acid forming organisms.

These conclusions were so diametrically opposed to those previously stated that the author deemed it advisable to make experiments along these lines and to ascertain what the actual conditions were in Ottawa. The percentage of proteolytic and acid-producing organisms were determined in a number of pasteurized and raw milks with the following results:

	Percentage of Groups	
	Proteolytic	Acid Producing
Raw milk	12	35
Pasteurized milk	2	49

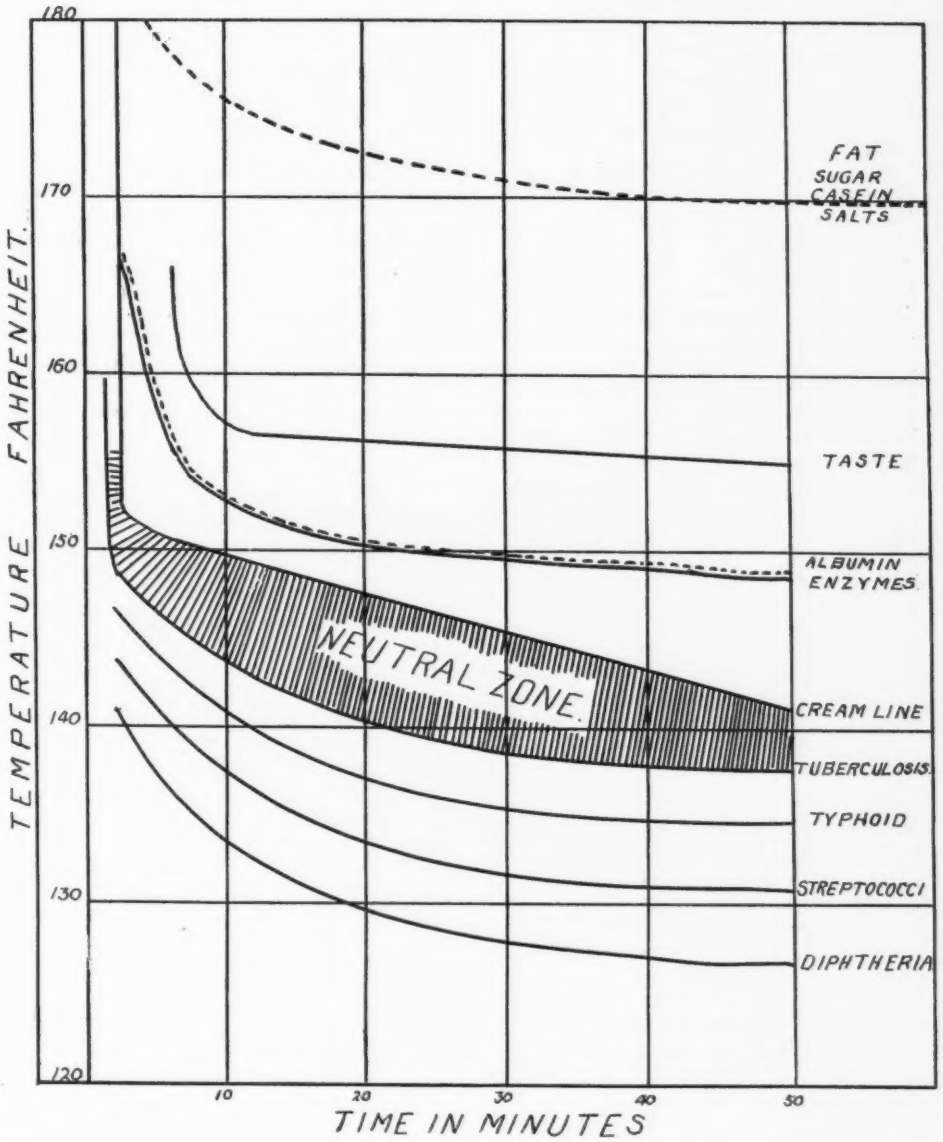
To confirm these results representative organisms of the various groups were isolated and subjected to pasteurization in sterile milk in the laboratory. These results are also shown in the following table:

Effect of Heat on Milk Bacteria.

Temp. 145°F. Duration of heat, g. minutes	Type of Organism			
	B. Acidi Lactici	Strep. Lacticus	B. Lacticus	Proteolyti Organismc
0	6,100,00	80,000,000	71,000,000	15,000,000
10	2,500	100,000	+	110
20	127	400	+	10
30	96	380	+	4
Pctge unde- stroyed 15 x 10 ⁴		3.7 x 10 ⁴	?	0.3 x 10 ⁴

In connection with these results it is important to observe that in no case was there a total destruction of the organisms and that the percentage of acid organisms remaining was greater than that of the proteolytic ones. Further corroborative evidence was obtained during the examination of 98 samples of pasteurized milk by the fermentation test. Of these, 55 to 60 per cent. gave a smooth gelatinous curd due to acid producing organisms, whilst in 35 per cent. of the samples, the number of organisms was too small to produce a curd

EFFECT OF HEAT ON MILK. Modified North Diagram



within the period of incubation. Not a single sample produced a peptonized curd and the proportion of rennet curds was exactly equal to that in certified milk during the same period. The rate of increase of the various groups forming the bacterial flora of pasteurized milk has been studied by Ayers and Johnson (U.S.A. Dept. of Agriculture). They state that: "When different grades of milk are pasteurized at 62.8 degrees C. (145 degrees F.) in the laboratory and held at room temperature the bacterial flora may undergo three distinct changes. First, when a fair quality of milk is pasteurized the acid group may develop at once and overgrow all the other groups, forming acid and producing a normal curd. Second, when a poor quality of milk is pasteurized the peptonizing group may grow rapidly at first along with the acid group, which later overgrows them. In this case the milk will first become curdled with a rennet curd due to the peptonizing bacteria, then later will become sour from the development of the lactic acid group of organisms. Third, when a good grade of milk is pasteurized the peptonizing bacteria may overgrow the acid group of organisms so that the milk becomes peptonized without the development of any acid. These same grades of milk, treated in the same manner but held in an ice chest at 10 degrees C. (50 degrees F.), show entirely different changes in their bacterial contents. The growth of the peptonizing group is restrained so that they are of little importance. The percentage of the acid group remains about the same through a long period.

"Occasionally the percentage of the alkali group may increase after five days, but eventually the acid group forms the major group. These results were obtained from laboratory experiments and only indicate possible changes in the bacterial flora of pasteurized milk when held at different temperatures. They show the delicate balance between the bacterial groups, but can not be applied to indicate the bacterial changes in milk pasteurized and handled under commercial conditions."

The author's experiments in this direction, but carried out with the commercial product, show that whilst in some instances there is a rapid development of the proteo-

lytic organisms the acid producers almost always predominate and the curd produced is of the acid rather than the rennet type. The most favorable range of temperature for the peptonizing group seems to be 60 to 70 degrees F. whilst above and below these limits they are checked by other organisms. The tendency to overgrowth of proteolytic organisms is especially noticeable in pasteurized milk of very low bacterial count, i.e., produced from milk of good quality, but this is also applicable to raw milk of equal quality. In neither case, however, are there sufficient bacteria within 48 to 60 hours to warrant condemnation of the sample. The author believes that milk is essentially a fresh food and that no sound excuse can be found for keeping it beyond that period, no matter what the source may be or the treatment it may have received. The logical remedy is to compel all milk to be sold in sealed containers on which the date of production must be indicated.

The rate of bacterial increase in pasteurized milk is undoubtedly greater than that of the average raw milk, but this is due to the greater initial bacterial content of raw milk and not to any change in the pabulum of the pasteurized product.

As regards the danger of pasteurizing milk otherwise unfit for consumption and of repasteurizing stale milk it may be pointed out that this can be prevented by proper sanitary supervision of pasteurizing plants. In addition such practices are not of any real benefit to pasteurizers as the attempt to blend off such milk involves the risk of producing troubles which mean a serious financial loss. It is the author's opinion that the production of milk intended for pasteurization should be subject to the same inspection and supervision as other milk. The fact that milk is to be pasteurized is no excuse for laxity either on the part of the producers or those responsible for their supervision. This would also reduce to a minimum any possible danger of poisoning by toxins: the danger of reinfection after pasteurization has been very much over stated. In Ottawa 4 men are sufficient for the bottling of all the milk produced by 3,000 beasts, and only one actually comes in contact with the milk, whilst assuming that only one man is em-

EFFECT OF HEAT ON ENZYMES IN MILK

ENZYME	AUTHORITY	WEAKENED		DESTROYED	
		at Temperature	in Minutes	at Temperature	in Minutes.
Galactase	Babcock & Russell	65-70	10	76-80	
	Von Freudenreich	65-70	30	75-80	
	Hippius	65	30		
Amylase	Koning			68	30
	Hippius			75-80	
	Race	68	30	83	30
Lipase	Gillet			65	
Lactokinase	Hougardy			75	30
Oxidases	Marfan			79	
	Hippius			76	
Peroxidases	Wender			83	
	Schardinger			80	
	Ostertag			80	
	Lythgoe	70	30	75	30
	Race	68	30	73	30
	Numerous others	75		79-80	
Catalase	Van Italie			63	30
	Wender			80	
Reductase	Jensen			>70	
	Lythgoe	65	30	70	30
	Race	68	30	71	30

ployed per ten cows producing milk, a total of 300 men come in contact with milk in the farms; it is obvious that the chances of infection are reduced 300 fold by pasteurization as practised in Ottawa.

Whatever may be the conditions in other cities as regards the contamination during bottling, routine examinations show that the conditions in Ottawa are excellent. The investigation of some of the plants in the United States has shown, that in several instances, the pasteurized product gave a higher bacterial count than the raw milk, but in Ottawa the reverse has always held. The figures for the year ending October 31st, 1914, for the raw milk and pasteurized milk supplies are as follows:

	Total Bacteria per c.cm.	B. Coli. per c. cm. (8 mos.)
Raw milk	284,000	4.873
Pasteurized milk.	30,400	27

The absence of any claims to the contrary definitely establishes the fact that the pathogenic organisms are destroyed by pasteurization. The word "destroyed" is used here in a relative rather than an absolute sense for it seems probable, arguing by analogy from the author's results with other organisms, that there will be a resistant minority which will escape. As there is abundant evidence that the destruction of *B. tuberculosis*, *B. typhosus* and *B. diphtheriae* commences at a lower temperature than that of the saprophytes used by the author, it seems probable that the relative infectiveness is reduced at least 100,000 times by pasteurization.

This is merely mentioned in order to point out that although the action of heat is slightly selective there is nothing of the miraculous about it in its separation of the pathogens and saprophytes—the tares and the wheat. Two factors control this process: (1) The initial concentration of the organism, and (2) its viability, and a careful consideration of these enables one to thoroughly realize the results attainable.

Biochemical.—In this section only brief mention will be made of the various enzymes present in raw milk and the effect of heat upon them. The enzymes present in milk are many, the principal ones being galactase, oxidases, peroxidases, catalase, amylase and reductase. The nature and character of these bodies at once suggests that their origin is in the blood cells of the

cow and some unpublished experiments of the author indicate that the amount of enzymes present in milk is somewhat proportional to the cell content. These cells were formerly regarded as pus cells, but during recent years it has been proved that the great majority are leucocytes and epithelial cells and that they are a normal constituent of milk.

The effect of these enzymes upon milk and the role that they play during digestion is chiefly hypothetical, but their activity is so small compared with that of the normal secretions of the alimentary tract as to be a negligible quantity. In view of the possibility that this view is incorrect, whatever data is available as to the effect of heat upon them has been collected and tabulated together with some original determinations.

Generally speaking these results show that heating milk to 145 degrees F. for 30 minutes has no appreciable effect upon the enzymes.

Chemical.—Various claims have been made that chemical changes are produced during the pasteurization of milk and that they are the cause of various intestinal disturbances. These were investigated during 1913 by Dr. Ruop, of the Dairy Division of the United States Department of Agriculture, and his conclusions are:

1. Milk pasteurized by the holder process at 62.8 degrees C. (145 degrees F.) for 30 minutes does not undergo any appreciable chemical change.

2. The soluble phosphates of lime and magnesia do not become insoluble. At 155 degrees F. the quantity of phosphoric acid, lime and magnesia in the serum of both raw and pasteurized milk are practically the same.

3. The albumin does not coagulate at 145 degrees F., but at 150 degrees F. 5.75 per cent. of the albumin is rendered insoluble. As the temperature increases the amount of coagulated albumin increases: at 155 degrees F. the quantity increases to 12.75 per cent., and at 160 degrees F. it amounts to 30.78 per cent.

4. The time required for coagulating the casein by rennin is slightly less in milk pasteurized at temperatures up to 149 degrees F. than it is in raw milk. At 158 degrees F. there is a slight retardation,

while at 167 degrees F. the time has almost doubled.

5. The acidity as determined by titration is slightly diminished in pasteurized milk.

The bacteriological, biochemical, chemical and physical changes produced by heating milk are diagrammatically represented in the diagram on page 491 and which is a modification of the one prepared by Dr. North, of New York. This summarizes the present knowledge on this important subject.

There are several points of interest in connection with this diagram:

1. The selective action of heat on pathogenic organisms.

2. The order in which the changes produced occur: First, the anabolic (reproductive); second, the physical; third, the biochemical; and, lastly, the chemical.

The disturbance of the vital activities follows the natural biological sequence and the anabolic or reproductive functions being the highest, they are the first affected.

Clinical.—When the clinical evidence against heated milk is carefully sifted it will be found that the only valid objections

are based on the use of cooked or boiled milk and not to pasteurization as now practised.

A typical example of this is to be found in a paper by Vincent in the American Journal of Diseases of Children for February, 1914. In the preface to this paper considerable space is devoted to the pasteurization of milk and the usual objections as to the weakening and destruction of the lactic acid bacteria are raised. The role of these organisms in the digestive tract is discussed, particular emphasis being placed upon the importance of the presence of acid producing organisms in checking the proteolytic activity of the B. Coli types, which, when predominating, result in colon toxemia. One is led to infer that pasteurized milk assists in the production of these toxemias, but a careful study of the case reports appended, shows that the milk used in the diet of these children had been *cooked* and not pasteurized.

There are on record a number of results showing the comparative gains made by children fed on raw and pasteurized milk; Park and Holt (Arch. of Ped., Dec., 1913, 20, p. 881) report the following cases:

KIND OF MILK	Number of Infants	Remained well for entire summer	Number having severe or moderate Diarrhoea,	Average number days off milk during Summer	Average weekly gain in weight	Average number of days Diarrhoea	Deaths
Pasteurized milk, 1,000 to 50,000 bacteria per c cm	41	31	10	3.0	4.0*	3.9	1
Raw milk, 1,200,000 to 20,000,000 bacteria per c.cm.	51	17	33	5.5	3.5*	11.5	2

*Ounces.

Thirteen of the 51 infants fed on raw milk were transferred before the end of the trial to pasteurized milk because of serious illness. It is believed by the writers that if these infants had been retained on the raw product, the comparative results would have been still more favorable to pasteurization.

The figures obtained from Randalls Island, New York, are very instructive. Until 1898 the infants were fed on raw milk obtained from a carefully selected

herd pastured on the Island. The results for three years were :

Year	Children Treated	Number of Deaths	Percentage
1895	1,216	511	42.02
1896	1,212	474	39.11
1897	1,781	524	44.36
Total	3,609	1,509	41.81

A pasteurizing plant was installed in the early part of 1898. No other change in diet or hygiene was made.

Year	Children Treated	Number of Deaths	Percentage
1898	1,284	255	19.80
1899	1,097	269	24.54
1900	1,084	300	27.68
1901	1,028	186	18.09
1902	820	181	22.07
1903	542	101	18.63
1904	345	57	16.52
Total	6,200	1,349	21.75

These results are beyond the expectations of the most sanguine and critics would probably suggest that either the condition of the raw milk supply was much inferior to the average supply, or that other factors assisted in the reduction of the case mortality subsequent to 1898. The decrease in the number of cases treated would be a factor in this direction as it would probably enable a greater amount of attention to be given to each case. Even when such factors are discounted there still remains a large margin in favor of the pasteurized product.

The most recent series of comparative determinations of the clinical effects of raw and pasteurized milk was that carried out in the milk stations of Washington, supported and conducted by Geo. M. Oyster, Jr., from April, 1911, to October, 1913, a period of over 18 months.

Of the 1,018 cases in which the records are fairly complete physicians prescribed raw milk exclusively for 351 and pasteurized milk exclusively for 557 babies, whilst in 110 cases various changes were made, from raw to pasteurized or vice versa,

one or more times as directed. The results were as follows:

	Net gain per baby per day.
Pasteurized milk exclusively . . .	0.4077 oz.
Raw milk exclusively	0.4030 oz.
Pasteurized milk temporarily . . .	0.4607 oz.
Raw milk temporarily	0.4312 oz.

During the latter part of the experiment the raw milk supply was unavoidably discontinued and pasteurized milk only was supplied. During this period, the author is informed, no complaint or criticism, either direct or implied, was received by Mr. Oyster from any physician prescribing the milk.

The above results indicate that pasteurized milk is AT LEAST equal to raw milk as regards nutritive properties and digestibility and that it can be substituted for raw milk without producing adverse effects.

As regards calorific value, upon which, other things being equal, the price of milk should be based, it may be pointed out that the calorific value of the pasteurized milk supply of Ottawa for the past year is practically equal to that of the nursery milk, the values being 20.2 and 20.3 calories per fluid ounce respectively.

To Summarize.—From every standpoint which has been investigated, milk pasteurized under proper conditions as exemplified by the Ottawa supply, is **not inferior to** raw milk in any respect, and is superior in others on account of the assurance obtained of the absence of pathogenic organisms of all kinds.



TUBERCULOSIS AND THE BACTERIOLOGY OF EVERY DAY LIFE

By **SIR JAMES GRANT, K.C.M.G., F.R.C.P., Lon.**

President and Chief of Staff, General Hospital, Ottawa

IT is a gratifying circumstance that the present serious war has not prevented this important meeting of the Canadian Public Health Association, so closely in touch with the happiness and prosperity of our people. I am pleased to state I have just completed a survey of the entire Dominion, from Victoria to Halifax, and more recently through New Ontario, and the mining districts of Sudbury, North Bay, Cobalt, Porcupine and Haileybury, and most gratified to report a decided decline of fully twenty-five per cent. in the death rate from tuberculosis since the formation of the Canadian Association for the prevention of disease. This is indeed a most gratifying result of the fifteen years of labor of the Association. This marked change for the better is due to a combination of circumstances.

1. The education of the masses, by a flood of literature, in slips and pamphlet form, from the Dominion Government chiefly, how to detect this disease and the steps necessary to counteract its influence.

2. No less than nine institutions have been formally opened for the treatment of tuberculosis since the annual convocation

held in Ottawa in 1913, all of which are doing excellent work.

3. The excellent service of the Dominion Government to prevent the spread of tuberculosis through milk from infected cows.

4. The housing problem, as vigorously advocated by the Conservation Commission, against overcrowding, and the adoption of sanitary improvements generally.

5. A great and serviceable advance is the domiciliary visits of district nurses of the various orders now in active operation.

6. The merited assistance of the press in Canada, in stimulating the fresh-air life movement for our young generation.

7. The marked advance in the scientific diagnosis of tuberculosis is a characteristic of the present day, life saving to a great degree.

8. The preventoria and open-air school movement are advances in keeping with the progress generally in lessening the spread of tuberculosis.

9. The establishment of tuberculosis dispensaries is a well timed advance in the treatment of that disease, of a most commendable character, and thoroughly practical in the results.



SIR JAMES GRANT

The Nestor of Canadian Medicine

10. Tent treatment of tuberculosis and country air. Highly advantageous in all such cases.

11. In regard to carriers of disease, our ideas have changed materially within the past few years. The outcome of laboratory work and the epidemiological study of disease. Malaria, measles, influenza, cholera, diphtheria, typhoid fever, cerebrospinal meningitis, poliomyelitis and tuberculosis, in all of which air is considered a chief vehicle of infection, and even the virus of smallpox is known to have been carried a mile or more from the hospital, by the air, and sufficient to infect persons at that distance. What is more natural than that the air which bathes disease should prove a direct means of infection.

12. A thorough examination of the food products of the chief pork packing establishments by veterinary experts for the safety of our people.

As a carrier of disease the house fly is known to-day to play a very conspicuous part. For fully a quarter of a century, holding these views, after presence at large meetings, church assemblies, public street cars, and such like, I sponge the face, wash the hands and carefully rinse the mouth with ordinary water to remove, as far as possible, on return to my home any latent bacteriological action which might develop disease. This simple process, I feel confident, has added years to my life.

The able lectures of our worthy secretary, Dr. Porter, have contributed much valuable information to the public in chief centres of Canada, thus helping on a noble duty in tuberculosis.

There are occasional difficulties in diagnosis as well as in treatment of tuberculosis. Trials are sad and tests often unsatisfactory, and yet much good has been accomplished. A snap diagnosis is not a

safe procedure. Great care and close observation are necessary to prudently estimate the force of the entire facts of each case. Errors in diagnosis occasionally result from the presence of chronic infective endocarditis, associated with bronchopneumonia, low fever and disability, diagnosed as pulmonary tuberculosis, at times a difficult problem, even with the presence of petechial spots.

The opinion arrived at in the present day by expert leaders in pulmonary disease is, that for the next ten years of our lives, practice in the refinement of physical diagnosis will not do much harm, to either patient or physician. "My father, Dr. James Grant, of Glengarry, over forty-five years in active practice, remarked to me as a student of medicine, when a case of cough turns up with even slight haemoptysis, 'look out for trouble,' this is not usually a bleeding from the throat, of no significance."

The next important feature is the presence of "Fine Rales," which are frequently the first physical indications to diagnose, but not hopeless, as many such cases make an excellent recovery, much depending on early treatment.

Errors in diagnosis will occur, and in the ablest hands, such as in cases of hypernephroma, with lung metastasis, even where severe cough and loss of flesh; certain lung indications favor a diagnosis of tuberculosis. How frequent in hospitals are cases of old mitral stenosis linked with haemoptysis and bronchitis, tabulated as serious cases of tuberculosis.

I feel confident the outlook of tuberculosis, in a social sense, is decidedly improving, the result of better housing, cleaner streets and more perfect sewerage.

A chief medical problem before the profession is the early diagnosis of pulmonary tuberculosis. Lesions of the lung are

what we are looking for, the required evidence for immediate action and treatment.

This disease is so insidious and frequent too great care cannot be exercised in defining its presence. In tuberculosis there are conditions yet undefined, and the task is one of quiet and patient observation, to arrive at a correct diagnosis, not at present considered complete without the X-ray record of screen and plate, conveying fluoroscopic and radiographic findings. In the words of the great Pasteur, "Our duty to do good only ends where our power to do good fails."

The medical profession stood to their

guns, and, irrespective of any personal gain, embraced every opportunity to lessen human suffering, arising from tuberculosis.

Mitchinikoff, successor to Pasteur, recently announced that the death rate in Europe from tuberculosis at present was reduced fully twenty-five per cent. In conclusion, I trust I will be pardoned in suggesting that our Toronto medical friends, participating in tuberculosis, form a "Laennec Clinic" and thus shed fresh light on this important problem, in which the present death rate was greater, than in the armies of the world, now in sad conflict.



THE REGISTRATION OF TUBERCULOSIS

By EUNICE DYKE

Superintendent of Nurses, Department of Public Health, Toronto

YOUR committee has asked for conclusions regarding the notification of tuberculosis—these conclusions to be drawn from Toronto's short experience in enforcing the act. The Public Health Act of Ontario provides for the notification of tuberculosis by defining it as a communicable disease, and including it in the section calling for notification by "legally qualified medical practitioners," and emphasizes it by means of regulations.

Its enforcement in Toronto was placed, by the Medical Officer of Health, in the hands of the tuberculosis nurses in June, 1911. During 1914 the number of deaths from pulmonary tuberculosis in the Province of Ontario, exclusive of Toronto, was 1,624, and the number of cases reported to the Provincial Officer of Health was 737. During the same year, the number of deaths from tuberculosis in Toronto, including city patients dying in provincial sanatoria, was 398, while the number of cases reported was 598, or over. Toronto has succeeded better than the province in enforcing the act, but has failed as yet to secure complete notification.

The rapid growth of the work of the Public Health Nurses has meant difficult adjustments, and the present tuberculosis file in the central office is a recent attempt to compile data for statistical purposes. Unfortunately, conclusions which might be drawn from this file cannot be stated until inaccuracies have been corrected. These records cover the period from June 1st, 1911, to September 1st, 1915. The items presented have been compiled by the nurse in charge of the tuberculosis clinics, and are correct.

The number of cases on file for which we have received a physician's written notification, is 2,793. The total number of cards on file is 3,023, including 230 duplicates, which gives our total of 2,793 cases. The number of these cases reported once is

2,578; reported twice is 200; and reported three times is 15, making our total of 3,023 cards. The number of reports received from private physicians is 1,990, and from dispensaries 1,033. These last two figures are the ones to be discussed. Two hundred and eighteen of the cases reported were not placed under the supervision of the nurses. The reports include 76 from other than pulmonary tuberculosis.

The results so far obtained in enforcing the act are not permanent, but are dependent upon the constant watchfulness of a changing office staff. The physicians in charge of the tuberculosis clinics are interested in the administrative side of preventive medicine, and report all cases, but the majority of patients remain under the observation of private physicians. Only 66 per cent. of the reports came from private physicians, and yet this poor result has been secured by means of constant effort and all the tact at the command of the office nurse.

Communicable diseases which develop soon after contact are reported readily because the pressure of public opinion is brought to bear upon the physician and family. While the man who develops tuberculosis will not remember the physician who failed to instruct his consumptive mother in the necessary precaution, the neighbor reports the physician who fails to have a scarlet fever house placarded. Occasional complaints are received from friends of a patient, but these invariably deal with late diagnosis or indifference to the possibility of contact cases. The fact that the notification of tuberculosis is confidential and the results intangible, makes it impossible to bring the force of public opinion to bear directly upon the detail of notification.

The method employed is to forward a notification card or to telephone to the physician whenever he is known to have

made a positive diagnosis. This information reaches the office through laboratory reports of sputum; through application for sanatorium care and from miscellaneous sources. All deaths from tuberculosis are reported by the City Clerk's Office, and a reminder of the act is forwarded to the physician reporting the death if a notification card is not already on file. During July, 1915, 14 cases were recorded, and 16 during August.

Occasionally the nurses have felt that a follow-up system which is thorough enough to secure notification, is also strong enough to dispense with it. But the very existence of a follow-up system depends upon the right to demand notification of tuberculosis.

Four years ago the Toronto Department of Public Health had established co-operation with two hospital dispensaries by providing them with a visiting nurse. The private physician, however, was responsible only to his own conscience for the work done in the tuberculosis home. The requests made by the Public Health Nurse for notification of cases were resented or were received with amusement. The notification card, however, provides a space in which the physician may make requests for nursing service. Notification, I am sure, would fail, unless enforced by those who can be of real service to physician and patient.

The number of suspected and positive cases passing through the nurses' hands in the given period has been 4,472, while the cases reported in writing by physicians has been only 2,793, and few of these have come unsolicited. 1,791 suspected and positive cases of tuberculosis are under city supervision to-day, and yet comparatively

few of them have been actually registered by the physicians. Our clause in the Public Health Act has had more effect than the 2,793 written reports indicate, because it has created the opportunity to reach 4,472 cases. Possibly our present methods are slowly leading the private physician to realize that he is responsible to the Medical Officer of Health for still one more communicable disease, but I doubt if he will ever remember to make out his notification cards.

The majority of physicians are interested in medical science, and all are interested in building up a practice, but unfortunately only a few are interested in the administrative side of the new science of preventive medicine. We can expect the physician to do only those things which have a purpose in which he is personally interested, and the notification of tuberculosis has for him neither scientific nor financial value. Its purpose is to give the Medical Officer of Health the acknowledged responsibility for the control of tuberculosis, and to place in his hands a list of the known cases with the names of the physicians in charge.

The Association of Tuberculosis clinics, which is developing in Toronto, will remove one obstacle in the way of prevention of tuberculosis by providing increasing opportunity for the students to learn how to diagnose incipient tuberculosis. It is doubtful whether a recent graduate of a medical college understands the functions of a Department of Public Health. Might the Medical College not also provide lectures and observation in public health administration? Notification of tuberculosis as one of a physician's duties might then become an accomplished fact within the next generation of physicians.



THE REALM OF THE HAPSBURGS

By FLORENCE WITHROW

(Concluded)

THE year 1820 found the old fires of unrest in Italy still smouldering, and insurrections in Piedmont and Naples were quenched only by Austria's assent to the rule of their former kings, namely, Charles, the brother of Victor Emmanuel I., and Ferdinand of Anjou. However, Austrian authority still dominated Lombardy and Venetia.

As to Hungary, after a long time had elapsed since the last Diet, Francis I. summoned a new one at Pressburg in 1825, but he found the members strongly opposed to Austria's regulation of their taxes and militia. However, he paid little heed to their grievances, and appointed that the next Diet should not meet until five years later.

Francis I. was succeeded by his son, Ferdinand I., the second hereditary Emperor of Austria, and a true Hapsburg. The first ten years of his reign were devoted to disturbances in the free Republic of Cracow, which had been declared independent by the Congress of Vienna, but under the protection of Austria, Russia and Prussia, who were bound to respect its neutrality. Refugees from Poland fled to Cracow and plotted an insurrection against Russia (1836) whereupon the three powers demanded that all Poles be expelled therefrom. The little republic claimed that many of the fugitives were innocent, and that the demand was unjust. However, Russian Cossacks and Prussian Hussars immediately entered the country and disarmed the local militia. This so-called arbitrary protection lasted ten years, until the peasantry revolted, but having no force of arms, Cracow's independence was doomed, and she was obliged to become an integral part of the Austrian Empire. Insurrections also occurred in Hungary, where the people demanded that their own tongue be the official language, and that they have control of their own army, but again were these demands refused.

Austria's arbitrary control brought matters from bad to worse. Finally Metternich, the Austrian Minister, proposed that the Parliament at Pressburg be dissolved, which insult called forth a condemnatory resolution from the Hungarian Chamber. The Kossuth Ministry then started a policy of separation, claiming independent administration for war, finance, and foreign affairs. The Slavs and Croats, who were stronger than the Hungarians, proposed something different, but the result was a new constitution, giving a measure of redress to the many nationalities represented.

Ferdinand fled from Vienna to Innsbruck in the Tyrol, but was obliged to return to receive an Hungarian deputation which, meantime, the Austrian Government forbade to appear. This caused the Hungarian Diet to invest Kossuth with dictatorial powers, and soon murder and rapine followed, and the streets of Pesth ran blood. At this moment the Emperor resigned in favor of his nephew, Francis Joseph, December 2, 1848, thus the country was saved from open war. Ferdinand lived on in Prague until 1875, but always cast ugly gibes at the belligerent Magyars.

The new ruler initiated a constitutional policy in place of Metternich's old system of despotism, but this was rather from necessity than from choice. He inherited Hapsburg autoeracy and found himself weighed down with titles* and persistent foes.

Chief among these was Hungary, whose subjugation seemed essential to the integrity of the Empire, hence Austria bent all her forces to prevent its independence. The revolutionary government under Kossuth was obliged to desert the capital, Pesth, but in a few months triumphantly returned, and formally deposing the Emperor, declared Hungary an independent state April 14, 1849.

Hungary's independence, however, was

*Francis Joseph, at 18, was Emperor of Austria, King of Hungary and Bohemia, King of Lombardy and Venetia; Dalmatia, Croatia, Slavonia, and Galicia; King of Jerusalem; Grand Duke of Tuscany, of Cracow; Duke of Lothringia, Salsburg, Styria, Carinthia, Grand Prince of Transylvania, Margraf of Moravia; Duke of Silesia; Count of Modena; Duke of Parma; Count of Hapsburg Tyrol, etc. etc.

short lived, for with the aid of a huge Russian army, the young Emperor inflicted irreparable defeat on the Magyars, and Kosuth with his associates, was forced to flee to Turkey, where the Porte refused to hand them over to Austria.

Northern Italy also became reactionary against Hapsburg tyranny, but immediately Venice was bombarded, and the Piedmontese were defeated at Novara by Radetzky, 1849.

In addition, relations between Prussia and Austria became strained, and when the latter summoned a confederation Diet at Frankfurt, Prussia called an opposition one at Berlin, but fortunately for a time, this political discord subsided.

In 1856 Austria played an important part in mediating a peace after the Russia-Turkey war between these powers and Great Britain and France, who jointly had declared war on Russia, partly to wrest from her the Crimea, held since 1784. As a result the Black Sea was neutralized, and the Danube declared a free river, but Russia still holds the Black Sea peninsula.

Meantime a storm again threatened in Italy. To gain the support of the Pope, who with Austria viewed with alarm, the growing spirit of Italian unity, Austria, by special Concordat (1855), declared Roman Catholicism the state religion, with complete control over education. Ever since the battle of Novara, when Charles Albert of Sardinia abdicated, and was succeeded by his warrior son Victor Emmanuel II., Austria had reason to fear united Italian strength, but foolishly she precipitated matters by ordering Sardinia to disarm in three days. Great Britain did much to avert war, but to no avail, and soon Garibaldi's volunteers were winning victories. Finally at Magenta, June 4, and at Solferino, June 25, 1859, Italian and French troops, under Victor Emmanuel and Napoleon III., drove the Austrians from their positions. At this stage Napoleon III., without consulting Cavour or the Italian Government, which was incensed at his actions, sent General Fleury to the Austrian lines with proposals for an armistice, which resulted in the treaty of Villafranca, July 11, by which an Italian confederation under papal control was created. Lombardy, however, was ceded to Victor Emmanuel, Nice and Savoy

to France, while Venice was still maintained under the Austrian crown. Events then followed so quickly that Victor Emmanuel was soon proclaimed King of United Italy, save the Papal States. Cavour and Mazzini were the statesmen of these stirring days, and Garibaldi the soldier hero who dethroned the Bourbon dynasty of Southern Italy, invaded the Papal domain and hailed the King of Sardinia as King of Italy, 1861.

Austria having accepted the inevitable loss of her Italian states, turned to constitutional reforms, for the time had come when the Emperor saw he must keep his coronation promise. A new Reichsrath met in Vienna and was opened with all pomp and circumstance by Francis Joseph, but no Hungarian representatives appeared, as they maintained that by the Pragmatic Sanction their country must be governed by its own law. Independence and self-government was their emphatic claim. The Emperor tried to force obedience, but they concerted to adopt passive resistance by non-payment of taxes. At last conciliations were made, and the autocratic young Emperor was wise enough to grant the Hungarian demand, and in person opened their Diet at Pesth December 14, 1860. Transylvania, Slavonia and Croatia were summoned to send members to this assembly, thus in a manner the integrity of the Hungarian crown was recognized.

Once more strife occurred between Prussia and Austria. For centuries Austria had been the leading power in the Germanic Empire, but since Frederick the Great's time Prussia had risen in influence. The north was Protestant and commercial, the south Roman Catholic and agricultural. The north, more progressive, and under the dominant mind of Bismarck, was bent on nationalization. At this time the King of Denmark died, and Prussia saw the opportunity of gaining back to Germany the Duchies of Schleswig and Holstein, which by treaty (1852), had been assigned to the Danish crown. The Danes fought heroically to maintain their treaty rights, but England, not as noble in spirit as now, gave only empty sympathy to the wronged "little people." In consequence might proved right and Denmark lost Schleswig-Holstein. Of course pride and jealousy caused contention between Prus-

sia and Austria. Prussia claimed Holstein as her share, but the little Duchy which saw the growing despotism of Prussian rule preferred to be under Austrian control, which had just formed a constitutional government. Consequently in 1865 Austria took charge of Holstein and Prussia of Schleswig.

No sooner had this matter been settled than a more serious disagreement arose between Austria and Prussia, both jealously inflamed. The truth was that Prussia was bound to supercede Austria as the chief state in Germany. Accordingly she sought a new ally in Italy, the hereditary foe of Austria. All three countries mobilized tremendous armies, and on June 16, 1866, Prussian troops entered Saxony, which sided with Austria, and occupied Dresden.* The Prussian army was then, as now, the most powerful war machine in Europe. Directed by such men as the soldier king William, Prince Bismarck and General von Moltke, and with its purpose brutally offensive, its work was quick and decisive, and in an incredibly short time the great and terrible Battle of Koniggratz on the Elbe was fought, which left Prussia free to march on Vienna. The Austrian general, Benedek, hastened the remnant of his army back to the capital, but at this moment Napoleon III. intervened, and an armistice was declared, which resulted in the Peace of Prague August 23, whereby Austria had to pay Prussia an indemnity of forty million thalers, pledging Silesia for the same. Further, Hanover, Hesse-Cassel, Nassau, Hesse-Darmstadt and Brunswick became annexed to Prussia, and Saxony was forced to join the North German Confederation, of which Prussia was the head, and from which Austria was totally excluded. At this same time Lombard-Venetia was united to the Kingdom of Italy. In all this settlement France gained nothing, although promised much on account of her interference, but the wily Bismarck saw to it that she did not get even the Rhine territories which she expected.

As to Austria, she had indeed been humiliated, but out of the ashes of her defeat she arose to a sense of her obligation as head of her own diversified states. She realized that Hungary was the greatest of these and although having reluctantly

consented to its autonomous rule, the dual character of the relationship became more reasonable to her, hence on June 8, 1867, the Emperor and Empress of Austria were crowned King and Queen of Hungary at Buda-Pesth, and the Empire became known as Austro-Hungary.

A period of peace and prosperity followed, and reformation was effected along many lines. Firstly the Concordat with Rome was suspended (1870), which caused a more friendly relation with the Kingdom of Italy, and which furthered the interests of popular education. Constitutional government came to more fully adjust itself, and industrial and agricultural life became vastly improved. The one terrible incubus which inevitably follows war was the tremendous debt, which taxed the people to poverty.

Naturally the feeling between France and Prussia was none too friendly, as the former felt herself cheated after the Austrian struggle, hence by 1870 open hatred was manifest and the Franco-Prussian War was declared. Austria maintained a strict neutrality, since she sympathized with neither power, and felt too poor to enter again into the wastage of war.

Besides, she was having internal disruption among the Czechs of Bohemia, the Galicians, Slavonians and Tyrolese regarding their representation in the Imperial Reichsrath. They opposed centralization of government, and demanded a measure of home rule. One ministry followed another, but political dissension continued. Finally, in 1873, a decision was reached that provincial Diets should have increased control, but that the general body of electors, not the provincial Diets, should elect the Imperial Legislature. Francis Joseph sometimes swerved from the path of constitutionalism, but as time went on he realized and affirmed that "by the system of direct popular election the real independence of the Empire is obtained."

In the same year, 1873, a Universal Exhibition was held in Vienna, and international relations became more amicable among the European powers.

Nevertheless, four short years brought another war, the Russian-Turkish, 1877. Although, like Great Britain, Austria remained neutral, she was forced to fortify her borders, for Hungary hated Russia,

*Needle guns first used also breach-loading rifles on improved scale.

and Turkey threatened Austria. The Treaty of Berlin, 1878, closed this war, and placed the Turkish Province of Bosnia and Herzegovina under the administration of Austria, where they have continued in spite of various Turkish uprisings, but not until thirty years later, at the Emperor's Diamond Jubilee, 1908, were they formally annexed.

General elections taking place in 1879 popular disturbances naturally followed, and the Ministries of Count Taaffe and of Prince Auersperg were unseated, and Francis Joseph alone saved the situation. Again, in 1885, a new Reichsrath was elected, but a clash came between the German members and the Czechs, as the latter demanded their own language in the Bohemian courts of law. Party strife and racial friction have always characterized this heterogeneous empire, but with such diverse nationalities no doubt this were hard to avoid. In the Imperial army to-day eleven languages are spoken, and four distinct religions confessed.

For some years Russia continued to show a menacing attitude toward Austria and Germany by massing troops upon the frontiers. France also remained hostile to Germany. This led to the Triple Alliance of Austria, Germany and Italy, 1881, and the ultimate perfection of the military system of compulsory enlistment which, may God forbid, the Anglo-Saxon ever needing to adopt. In the same year King Humbert and Queen Margherita were received in Vienna, and a few years later Francis Joseph visited Emperor William I. in Berlin, and the following year the German Emperor returned the visit at Innsbruck. Thus did these felicitations ameliorate the international jealousies.

Better relations also between Austria and Turkey were effected through the opening of the railway to Salonica, May 18, and to Constantinople, August 11, 1888. The air was further cleared by a commercial treaty with Russia in 1894, and again in 1897, England being excluded from the advantage of the last agreement.

Domestic improvements gradually increased in the Dual Empire, and in 1892 a gold standard of currency was adopted, and four new coins minted. Electoral reform followed in 1893 when the franchise was greatly extended among the middle

classes. To offset this the Emperor was allowed to create peers to influence the Parliamentary vote, an abuse which still obtains.

Matters of religion and of intermarriage were also regulated, and by a bill called "Freedom of worship," the Jew was granted civil and religious liberty, a right which he sorely needed, as anti-Semite injustices had been systematically practised for centuries.

In 1894 the Hungarian patriot Kossuth died, and his funeral in Buda-Pesth was the occasion of an outburst of national feeling against Austria, which caused serious damage to the Royal Palace and to the opera house. Two years later the one thousandth anniversary of the existence of Hungary as a nation was celebrated in brilliant pageantry, attended by Francis Joseph in person.

The venerable Emperor has experienced many sorrows, but none more tragic than the suicidal death of the Crown Prince Rudolph, aged 31, in 1889, under circumstances of doubtful morality. Nine years later his beautiful Empress Elizabeth, aged 61, was assassinated in Geneva by an Italian anarchist. After her son's death her clouded life was passed chiefly at Corfu, in the Mediterranean, which royal villa was later purchased by the German Kaiser.

The last tragic death in the Hapsburg family, that of the Emperor's nephew and heir, is familiar by reason of its recent occurrence in June, 1914, and by its momentous result which to-day, a twelve-month later, blackens the world with war and reddens it with blood.

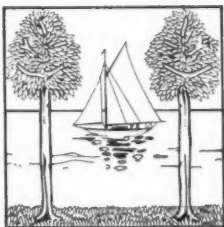
Many problems has Austria had, the Czech, the Balkan, the Polish, the Magyar, the Jewish. Race, language, and religion have all wrought incidents of peculiar circumstance too numerous to mention. However, the Ukraine (meaning Borderer) question will be mentioned, for it, in part, explains the present animosity between Austria and Russia. For years Austria has made determined efforts to make the Ruthenes, or Little Russians, Hapsburg adherents, with their centre at Lemberg, the capital of Galicia. This, of course, has been resented by the Czar's Government.

The Triple Alliance with Italy was renewed in 1912, but as Prince von Buelow

said: "the Alliance should never be so cordial as to preclude the possibility of a rupture," which surely came in 1915, when Italy deserted the Alliance and joined the Entente. The old Adriatic score is being solved again. Italy wishes to restore the traditions of the ancient Venetian Maritime Republic, and Austria wishes to Germanize it. Even Austrian and Hungarian interests clash, as the Magyars claim Dalmatia, as bequeathed to them by Maria Theresa in 1779, and restored in 1870, for Fiume is their only seaport.

In completing this cursory review of the Hapsburg Monarchy, let there be one closing word of eulogy for the hoary octogenarian Emperor who lingers, mayhap,

on a tottering Imperial throne. It is impossible not to credit him with unflinching devotion to duty and generosity and unselfishness of purpose. To him has been given in extraordinary measure, immense dynastic influence and the peculiar power through personal bond of holding together a perilous people. Louis XIV said, after himself—the deluge. Whether the Dual Empire with its fatal dependencies persists or disintegrates, the memory of Francis Joseph will remain imperishable, and his good deeds be held indestructible. Like Enoch, would it not be better that he "be not, for God took him," rather than that he go in sorrow to the grave as the deposed head of a disunited Empire.





The Fourth Annual Congress of this Association held recently in Toronto was a decided success. The

**The Canadian
Public Health
Association.**

attendance was not as large as on former occasions and that for good and sufficient reasons, but it was large enough and representative enough to ensure good, interesting, practical sessions. We felt that it was a mistake cancelling the Congress a year ago, and the meeting this year clearly demonstrated that although a great war has disarranged most of our Canadian activities an organization such as ours gains much by the convening of a yearly Congress. The papers presented were the equal of any that have been read during the history of the Association. We might go farther and say that some of them excelled any heretofore presented. We are safe in predicting that the material contained in some of the sessions will bear much fruitage in progressive legislation in the near future. It was clear to everyone that the Association is a vital factor in the upbuilding of Canadian life and is very much alive. While it is true that we must to a great extent mark time because there are great issues being fought out by our Empire, we must not forget that those at home must plan for a greater and a grander to-morrow for Canada. In this the Canadian Public Health Association must have a large share. There are stalwart men and noble women interested in the solving of the problems with which it is the business of this Association to grapple. Let us begin now to plan for a good meeting at Quebec and during the year let us look for ways of being useful to the Commonwealth.

We have received an excellent report of the proceedings of the conference of the M. O. H.'s of Nova Scotia, a portion of which we are publishing on page 516 of the present issue. Our only

regret is that we have had to delete any of it, for it was splendidly composed. However, we have one paper by Dr. W. H. Hattie, for publication, and others which were presented at the meeting may come to us later. Of paramount importance is it that such an admirable report of a Provincial Health Officers' meeting should be sent to us. This is exactly what should happen after every such event, and we shall be only too glad to give it the best of consideration. It is only as the local Provincial Associations keep in close touch with the Public Health Journal that we shall increase the interest of Canadians in the larger association, The Canadian Public Health Association. We are delighted with the contribution from our friends down by the sea.



If experience were not able to teach us anything this would be a sad world indeed. The recruiting

**Toronto
Recruiting
Depot.**

depot which has been established for some weeks in Toronto Armouries was the outcome of peculiar difficulties incident to the recruiting and medical examination of thousands of soldiers. Under the old method each unit did its own medical examination, filled out the papers for its own men, and as can readily be seen there

was lack of uniformity and endless confusion. Men used to be examined and attested and then perhaps wait days or weeks before being actively engaged in military service. The change which is described in another part of this issue has been all to the good. The Toronto *Armouries* daily is full of activity, pulsing with a life which is getting Somewhere. They are doing something worth while in a business way.



Anyone who has read the newspapers, and who has not, cannot help but be struck with the fact that the Provinces of Canada have been set over against each other boasting of the number of recruits sent into the Army. Besides distinctions have been drawn between Canadians who have enlisted and Englishmen, Scotsmen and Irishmen who have joined the colors while resident in Canada. When shall we learn common sense. Surely this great war, and the magnificent response of Canadians ought to put a stop to such picayune sentiment. Is not a man who has cast in his lot with Canada, a Canadian? Are we not fighting for the Empire and the ideals which have made it the greatest Empire the world has yet seen? This small talk about where we were born within the Empire, ought to cease at such a time as this. Our men are soldiers of Canada and of the Empire. That is enough.



The second and concluding section of this interesting reprint appears in the next paragraph. At a

Prevention of Disease vs. Cost of Living. At a time like the present, we of the British Empire are looking for ways and means to decrease the cost of living. This of necessity—now. When the war is over will it not be well to continue our study of this most important topic. There are so many things we can do without and some of these are preventable diseases and accidents. We wonder if this great and hor-

rible war will ingrain any lessons into the human race.

There are other trades in the pursuit of which physical incapacity is almost unavoidable. Examples of this group include wood carving, lithography, typesetting, as well as the work of copper plate engravers, designers, photographic retouchers, goldsmiths, diamond cutters, jewellers and needle women, especially those who work at embroidery. Obviously none with defective eyesight should enter these trades. In certain other trades, such as electric iron welding, glass blowing, etc., the dazzling rays of excessive light promote the formation of cataract. In trades in which lead, arsenic, phosphorus, methyl alcohol, nicotine, nitrobenzol, etc., are used, the occurrence of skin affections, eye affections, neuritis, paralysis, bone diseases, kidney diseases and blood diseases is so constant that no one to-day questions the cause. Preventive medicine has been able to reduce these dangers greatly, principally by adequate ventilation and light, and by instruction. It would take us too far to enter into the various manifestations of occupational diseases. Sufficient has been given, however, to warrant the suggestion that preventive medicine must form a part, and not an inconsiderable part, in any plan of industrial education or vocational training if the workers are to acquire and retain their best efficiency and health.

Preventable Illness: (b) General Diseases.

It has already been pointed out that fully 50 per cent. of illness is preventable. It is no exaggeration to state that if all easily preventable physical troubles were prevented, the addition which would be made thereby to the energy and happiness of the people is beyond description. This item is an additional gain in the family budget—the usual index of the cost of living. Not only has preventive medicine pointed out what diseases are preventable and how to prevent them, but also it has clearly grouped disease, both as to individual and to class, so that predisposition and immunity each have a vital value. The money value of preventable illness in Massachusetts is, including loss of wages and cost of medical attendance, \$14,896,912 each year. This great loss occurs in the wage-earning period of life. It is the

one factor often in the cost of living which, if transferred to the asset or credit column of the family, would mean an individual or family added to the class of producers with efficiency and one less in the group of dependents with inefficiency. The results achieved in the fight against tuberculosis are not unique in preventive medicine. Reduction in the morbidity, as well as in the mortality, of other diseases is equally striking and encouraging. The value of the lessons of the anti-tuberculosis crusade lies greatly in the fact that the public is now convinced that the once dreaded foes to humanity no longer possess the terror of former times; furthermore, that it is possible to win a victory over inheritance, environment, disease and even death by the observance of the simplest teachings of preventive medicine, especially those on cleanliness, exercise and diet; also that the effective remedies often are solely Nature's gifts—fresh air, sunshine and rest. It is becoming more evident each day that the weapons so effective against tuberculosis are equally effective in combating many other infectious diseases, as well as in eradicating those nervous and functional disturbances which are productive of ill health. While it is unquestionably true that enhanced prices of food have affected injuriously the health of many in the community, nevertheless it is far more evident that the real cause is often an unwise expenditure of the income for articles of food and, more evident still, an improper preparation of food rather than a question of quantity or quality of food or size of income even.

Educational authorities have grasped this fact and to-day great emphasis is being laid on this form of instruction to those who in a few years will be the housewives of the community. This brings the problem of prevention of diseases and the cost of living back to the schoolroom. Here lies the greatest opportunity for teaching the value of health and efficiency rather than trying later in life to reduce the cost of neglect of this instruction. The two terms "value" and "cost" are not synonyms.

A good illustration of this fact is the prevalence of heart disease. It outranks tuberculosis, pneumonia and infant mortality as a cause of death in Massachusetts.

It has no equal as a cause of impaired efficiency. All physicians agree that there is a great difference between a cardiac lesion and a diseased heart. No matter what the anatomic change present may be, that heart is not a diseased heart so long as it can adequately take care of the demands placed on it by the individual. Although this is all true, nevertheless the great value of treatment in heart affections is that of prophylaxis or prevention, rather than therapeutic or cure. This latter is the cost of negligence in applying prevention. So long as the cardiac lesion can be prevented from becoming an inadequate or incompetent heart, all goes well no matter how serious or of what form the changes in the valves or heart muscles may be. The enormously high death rate from heart disease to-day and the great frequency with which children at the school age exhibit genuine heart disease, often beyond a possible stage of competency adequate for the simplest vocations of life, make this problem one of the most important in political economy.

Eliminating the heart disease of those congenitally defective, who seldom reach the wage-earning period, it can be claimed that full 80 per cent. of heart disease could be prevented if the initial lesion and the exciting cause of the lesion were treated with half the care that is now given to the same stage of incipient tuberculosis. Preventive medicine teaches that rheumatism (often called growing pains), tonsillitis, chorea (St. Vitus' dance), diphtheria, scarlet fever, as well as the various infectious diseases, cause a large percentage of affections are unavoidable. Many, however, are preventable if anticipated early.

Special hospitals for the training of children and adults afflicted with heart disease offer the greatest promise of so molding lives that each person by a wise choice of occupation and mode of life may be able to live efficiently within his cardiac power. The cost of failure to learn the value of this lesson is inevitable—irregular employment, repeated illness, changing occupations, broken compensation of the heart and, finally, complete permanent dependency.

Next in importance to heart disease pre-

vention is the problem of prevention of disease of infancy and of childhood. The necessity, as well as the importance, of beginning this prevention early in life is shown by the single fact that one-third of all cases of blindness can be referred to infection and neglect at the time of birth. These sightless babies soon become a burden on the family and subtract much from the possible income by the home care required from wage-earning mothers. Much infection of eyes, nose, mouth, etc., of the newborn can be avoided by the observance of the simple rule in preventive medicine—cleanliness.

Infant morbidity and infant mortality as recorded to-day are a gross injustice to God and to mankind, neither excusable nor pardonable. It is little short of criminal negligence that permits them to exist. That they represent the greatest loss to mankind to-day is the verdict of all economists. To state that one-fifth of all deaths that occur each year are those of infants less than one year of age, and that one-fourth of all deaths are those of children less than five years of age, while appalling, does not half state the situation. Our present knowledge of sanitary measures guarantees readily that 47 per cent. of those who die during the first year of life could be saved, and that 67 per cent. of the diseases that kill in the first five years of life are preventable. Notwithstanding this possible prevention, more than 200,000 of these young lives are sacrificed each year in this country at the rate of one life each ten seconds of time. Nothing so contradicts our boasted civilization and our claim of modern advance in medical science as this yearly unnecessary waste of infant life. At times it would seem, from the apparent indifference shown in the matter, as if the public yet believed that this high rate of mortality among children at or soon after birth was a wise dispensation of Nature to eliminate the unfit. In a study of this problem, it becomes evident that almost one-third of these deaths, especially of children under one year of age, can be ascribed to diseases of the digestive system. These diseases, together with those of the respiratory system and congenital debility, carry off 70 per cent. of all babies who die in the first year of life. This reduces the problem of preven-

tion to simply giving to the baby its natural birthright, namely, the right to be born healthy, and secondly, pure milk and pure air or, as it is more generally stated, proper feeding.

The noble, patriotic, unselfish warfare that this association has waged for a purer and better milk supply in our city has won the admiration of all who put a value on human life above that of commercial interests. No physician questions the benefit of this factor in reducing infant illnesses and deaths in many cases in which this form of artificial feeding has, through necessity, been adopted. The problem that I would present, however, is not so much that of the quality of cow's milk as an article of food, but whether it should be advocated as an adequate or preferred substitute for natural breast-feeding. I do not think it is. Undoubtedly, the high cost of living has forced many women to seek employment outside the home in order to help out the family income, and a large sacrifice of life, prenatal as well as infant, has resulted. Many infants, even when born healthy, are sacrificed by either the inability or the unwillingness of mothers to nurse their offspring. The question of infant morbidity and infant mortality is not one of sanitation alone, or of housing, or of poverty as such, but is mainly a question of motherhood. The problem will be solved only when the value of intelligent motherhood is placed above that of philanthropy, of hospitals, of the medical profession and of the state. Neglect and ignorance are, therefore, more important than poverty as causative factors in the cause of infant illness and deaths. We have two striking illustrations bearing directly on this point.

During the siege of Paris (1870-71) the women were compelled to nurse their own babies on account of the absence of cow's milk. Infant mortality under one year fell from 33 to 7 per cent.

During the cotton famine of 1860 women were not at work in the mills. They nursed their babies and one-half of the infant mortality disappeared.

From 80 to 90 per cent. of all deaths from gastro-intestinal disease among infant stakes place in the artificially fed, or ten bottle-fed babies die to one which is breast-fed. In institutions it has been

found that the death rate is frequently from 90 to 100 per cent. when babies are separated from their mothers. After a trial of fifteen years, by which over 7,000 mothers with their babies were placed out in domestic service, the New York society was able to report that four-fifths of the babies lived and were in good condition; one-fifth died or were in poor condition.

The subject of infant feeding, therefore, is not to be treated as an ethical question alone, but must be considered as a problem of preventive medicine of far-reaching results. It is an undisputed fact of preventive medicine that certain vital tendencies, which make for the preservation of the infant, such as immunity against certain infectious diseases, are transmitted through the mother's milk to her child. Neither a wet-nurse's breast-milk nor a cow's milk can do this for a child.

The dangers connected with cow's milk as an infant food are principally these—the chemical, the bacteriologic and the quantitative. Even with these three elements reduced to their lowest danger point, there yet remains such a difference between cow's milk and human milk that the former can never be considered a safe substitute for the latter. This does not mean that we should relax one bit our efforts for pure cow's milk, which is in itself as near a perfect food chemically as any article of food we possess. Its value as an article of food must not be confounded with its relative value as a food for infants in place of maternal nursing, or even of wet-nursing of infants. One has to recall but a few of the essential differences between human milk and cow's milk to see the force of these statements. Notwithstanding all the successes in lessening the dangers from cow's milk, and with a full knowledge of the results achieved in feeding by modified milk preparations, I have no hesitation in advocating breast-feeding even under surroundings which appear to be unfavorable. The great prevalence of digestive disturbances, leading invariably to impaired vitality, often of a permanent degree, and the high rate of mortality among artificially fed babies, in spite of the great progress made in the art of artificial infant-feeding during the last decade, rob the foregoing statement of all appearances of an exaggeration of the

problem. There are unfortunately a large class of women who cannot nurse their infants, but medical experience the world over fails to substantiate the popular belief that failure to nurse the children is due to weakness in the mothers. The decrease in the proportion of breast-fed children is due, first, to more frequent occupation to-day of wife and mother outside the home; second, to the exaggerated claims of artificial food manufacturers, and the popular delusion that their adaptation to the physiologic needs of each infant is so simple that the process can be safely entrusted to "little mothers" who, after one or two lessons, can accomplish what the highest trained clinicians, working under ideal conditions of cleanliness and sanitation, fail to attain. Modern dress and modern social life have combined as factors in reducing the proportion of breast-fed infants. Whether these factors will collect their toll on the next generation of daughters remains to be seen. A recent investigation showed that only two daughters, out of 480 born to mothers who could not nurse their children, were themselves able to nurse.

The much heralded influence of poverty, overcrowding and poor housing conditions as factors in infant mortality does not accord with facts. Whatever influence any one of these conditions might possess is greatly minimized by the favorable effects of breast-feeding, and, as pointed out in the beginning, by the purchase, so to speak, of our hygienic advantage by a hygienic sacrifice in another direction. The truth of this is evident from a study of our own local situation. Boston has the lowest death-rate of infants under one year of age of any city in the country. Ward 8 has 190 persons to the acre, the most thickly settled part of Boston; yet it is next to the best ward, so far as infant mortality goes, and only fourth in the total mortality of the city. Ward 10, the sixth most congested district in the city, has the lowest general mortality as well as the lowest infant mortality in the city. The highest total mortality occurs in Ward 7, which has only 38 persons to the acre. Ward 5, with a density of 62, and Ward 13, with a density of 35, stand quite high in the rate of mortality each year. These same general results can be quoted from many cit-

ies of foreign countries. The conclusions from the study of the problem in the most insanitary districts of Italy are that the low infant mortality prevailing in many of these districts is due to the custom of breast-feeding followed by the poor people. In many cities of Germany and Austria the law requires the death certificates of infants shall contain a statement of the kind of food given to the infant either shortly before its death or throughout its life. There is no legitimate reason why the use of artificial foods and of so-called milk substitutes for infant-feeding should not be controlled by law and their use limited to the prescription of a physician. Such a law would reduce greatly infant morbidity and infant mortality.

I have dwelt at some length on the problem of infant morbidity and mortality because it is one of the greatest preventable wastes of life to-day, and one that weighs most heavily on the family budget. It resolves itself chiefly into a question of proper feeding. This is best guaranteed by intelligent motherhood, which can alone give to the infant that which neither wealth nor state, nor yet science, can offer with equal benefit to mother and child.

Many lessons of the value of preventive medicine in solving the complex problems of the cost of living might be presented in addition to those given in this address. I have selected the more prominent and the more evident of the group. There are others equally important.

The fact to remember is that the whole problem is a social one. Increased cost of living is not likely to be lessened or altered by laws or mode of life. Such remedies are largely academic. Preventive medicine does offer a cure for the condition in part at least if not in its entirety. It shows how the enormous waste of health, energy, money and life may be curtailed and greatly prevented. It guarantees to each person who will learn its lessons and who will apply even its simplest teachings an assurance of greater power, greater health, greater wage-earning ability. This means a nearer approach to the normal living standard of each individual—an efficient,

healthy mode of life—physically, mentally and morally.



This product has come to stay and before very long will be one of the household words wherever beverages are drunk.

Chocolatta.

It is a matter of anxiety when a new product is placed upon the market. If it does not meet a need it soon dies, but if it pleases the public taste its future is assured. As far as we can learn Chocolatta has made friends everywhere. The ease with which a cup of it is prepared has appealed strongly to everyone. Then its palatability and its digestibility have won universal praise. It has proved itself extremely beneficial in the sick room. Those who used it in the summer camps were loud in its praise. It does not profess to be a cheap product, but it does protest its goodness. Although when one considers that it is a combination of Chocolate, Milk and Sugar its cost in reality stands considerably less than the cost of the three as purchased for kitchen use. It has appealed strongly to the soldier and just here we might copy a letter which came under our notice a few days ago. It is from somewhere in France by the pen of an Army Medical Corps officer:—

"Dear Sir,—Last week I received your letter and two days later the package of 'Chocolatta', for both of which I wish to thank you.

At your suggestion I gave the preparation a try-out among some of our patients, taking typical cases of gastric ulcer, shock, (nervous) debility and other kindred complaints. It was pronounced excellent, soothing as well as nourishing. 'Tommy' called it 'Champion.' On the whole such a preparation could be substituted with good effect for the cocoa given nightly which is more or less of a sacred rite in military hospitals."

This is very pleasing to the one who thought out Chocolatta.



CANADIAN PUBLIC HEALTH ASSOCIATION FOURTH ANNUAL CONGRESS

THE outbreak of war caused the 1914 meeting to be cancelled, so that this was actually the Fourth Congress of this Association. The Executive Committee thought that a Convention should be held, even though the attendance of delegates might not be large, and the wisdom of this was shown by the response of the members, which was most gratifying. True, the attendance was not large, but the sessions being all general there was a good audience at each, and the delegates were enabled to discuss a very broad and varied programme.

The Association convened in the Academy of Medicine, Toronto, on the 3rd and 4th of September. The programme, as printed in the last issue of the Public Health Journal was pretty closely followed, and the various papers read will be published in the pages of the Journal during the next few months. The Clinic held at the Toronto General Hospital on Friday afternoon, when a number of cases of Mental Deficiency were shown was largely attended. A resume of the proceedings of this Clinic will be presented in a future issue.

The Committee on Resolutions, composed of Dr. Helen McMurchy, Dr. Page, Dr. Porter, Dr. Clinton and Dr. Withrow, brought down the following, which were unanimously adopted.

Resolution from the Public Health Association of Canada to the Right Honorable Sir Robert Borden, Prime Minister of Canada:

The members of this Association desire to tender you their warmest congratulations on your safe return to Canada. As Prime Minister of Canada we are delight-

ed to tender you and your Cabinet our warmest thanks for the able and philanthropic efforts you have made to establish a Hospital in France for the relief of the sick and wounded of the Great French Nationality.

We also wish to place on record our appreciation of the work of the Canadian Association for the Prevention of Tuberculosis which your Government has so ably assisted. Since its formation you will be pleased to learn that the death rate from tuberculosis has been materially lessened in Canada.

Resolved, That the Canadian Public Health Association again emphasises the desirability of creating a Dominion Department of Public Health, the said Department to correlate and unite under an expert administration all existing units in the Federal Government Service now engaged in work relating to the conservation of Public Health interests of the Canadian people.

That the Association is convinced that the Public Health requirements of Canada can be more efficiently and economically served by instituting such a Department of Public Health at the earliest opportunity.

Resolved that inasmuch as:

The Canadian Public Health Association realizes the extreme importance of maintaining the population of Canada on the highest possible plane from the physical, mental and moral standpoint.

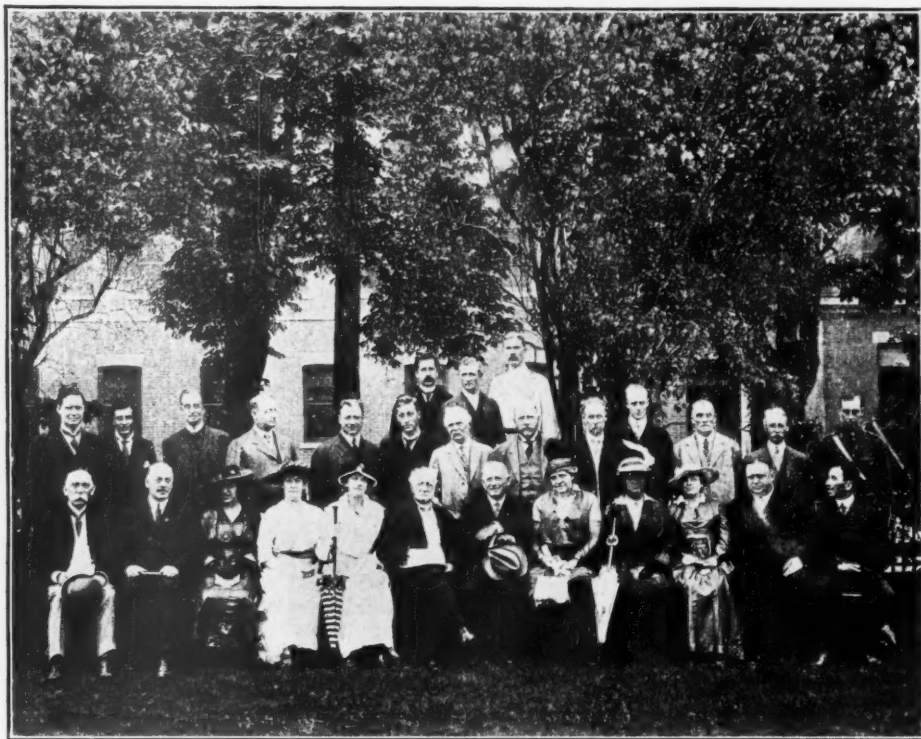
That inasmuch as it has been made cognizant through the papers, presented, and clinic given at the Session devoted to the diagnosis, education and care of the feeble-minded, of the intimate relation of

immigration to the increase of the feeble-minded in Canada, seen in the fact that 203 out of 425 cases of feeble-minded attending in the General Hospital Mental Clinic in 1914-15, were either the children of foreign born or were foreign born themselves.

Therefore, the Canadian Public Health Association desires to bring to the attention of the Government of Canada the

cal Inspection of Schools is essentially a Public Health Problem, the Canadian Public Health Association affirms that in its opinion Medical Inspection of Schools should be placed under the control of Boards of Health.

Resolved, That it is desirable that Medical Officers of Health throughout the provinces of the Dominion use every possible means of co-operation between the



A FEW OF THE DELEGATES

necessity for so developing a permanent medical inspection of immigrants, that a staff of men devoting all their time to the work, will be created, so that they may become expert in the very difficult task of detecting mental disease and feeble-mindedness in immigrants, and that the incoming Executive Council be instructed to bring this matter at once before the Premier and members of the Federal Cabinet.

Resolved, That inasmuch as the Medi-

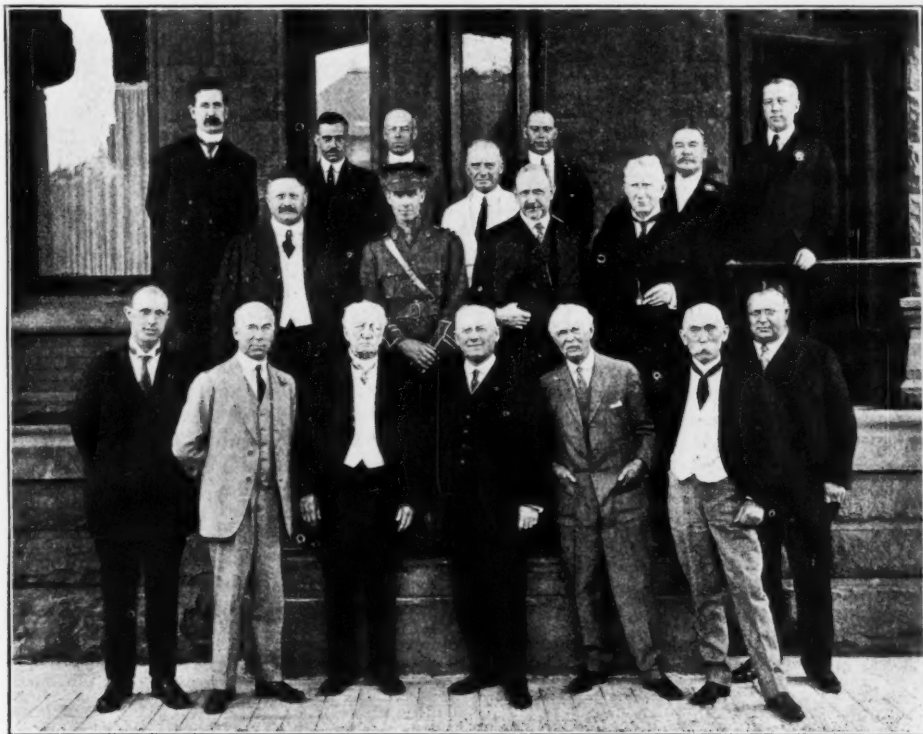
officials of the various municipalities, the public and the Anti-Tuberculosis Leagues in their efforts to raise funds and assist in every way their educational campaign.

Resolved, That this Association has noted with satisfaction the efforts of the University of Toronto, through its Department of Hygiene, under the direction of Dr. J. G. Fitzgerald, to meet the pressing needs of the practitioners of medicine of the Dominion in their fight against contagious and preventable diseases by

supplying serums and anti-toxins at a much lower cost than has heretofore been done, and this Association would desire to call the attention of its members to the valuable aid there offered in Public Health Work and Military Hygiene.

Resolved, That this Association congratulates all its members now on active service at the front on their opportunity to serve the King and the Empire. The

poration of the City of Toronto for the Invitation to meet within its boundaries and the courtesy shown while the Association has been in Session; to the Canadian Conservation Commission for the valuable and illuminating contribution of its Officer, Mr. Thomas Adams; to Mr. G. Frank Beer and Directors of the Toronto Housing Company for permission to demonstrate to the members by



AT THE LUNCHEON GIVEN BY DR. W. H. B. AIKINS, PRESIDENT OF THE ACADEMY OF MEDICINE

Association is proud of them, and would express its conviction that every member of the Association stands ready, if necessary, to give aid in the same great cause.

Resolved, That the cordial thanks of this Association be tendered to the Academy of Medicine for so kindly opening the doors of the Buildings for the Sessions, to the Toronto General Hospital for the valuable Clinic presented in one of its lecture rooms; to the Mayor and Cor-

a visit to its buildings an ideal Housing Scheme, and to the Directors of the Canadian National Exhibition for a pleasant social visit to its grounds.

The following officers were elected:

Hon. Pres.—P. H. Bryce, M.A., M.D., Ottawa.

President—Chas. J. Hastings, M.D., Toronto.

Vice-President—J. D. Page, M.D., Quebec, Que.

General Secretary—Oswald C. J. Withrow, M.B., M.R.C.S., Toronto.

Treasurer—Geo. D. Porter, M.B., Toronto.

Vice-Presidents.

Dr. J. A. Hutchinson, Quebec; Dr. A. J. Douglas, Manitoba; Dr. D. G. Revell, Alberta; Dr. Underhill, British Columbia; Dr. Hall, Nova Scotia; Dr. Warwick, New Brunswick; Dr. McMillan, Saskatchewan; F. A. Dallyn, Ontario; Dr. Johnston, Prince Edward Island.

Executive Committee.

The President, General Secretary and Treasurer, ex-officio, and T. Aird Murray,

Toronto; Dr. Duncan M. Anderson, Toronto; Dr. J. A. Hutchinson, Quebec; Dr. P. H. Bryce, Ottawa.

The Social side was not forgotten. Dr. W. H. B. Aikins, President of the Academy of Medicine, entertained the members of the Executive and the Guests of the Association Saturday at a luncheon in the York Club, while the Directors of the Canadian National Exhibition extended their hospitality on Saturday evening.

The Mayor of Quebec City telegraphed a very cordial invitation for the next Congress to convene in that city. The invitation was accepted.

CONFERENCE OF MEDICAL HEALTH OFFICERS OF NOVA SCOTIA

THE Conference of Medical Health Officers of Nova Scotia, held at Truro on the 7th of September, was well attended, and was in every way very profitable and successful. Dr. John K. McLeod, City Medical Officer of Sydney, presided, and Dr. W. H. Hattie acted as secretary. The papers read were distinctly meritorious and brought out splendid discussions.

The following officers were elected:

President—Dr. John K. McLeod, C.M.O., Sydney.

First Vice-President—Dr. Geo. E. De Witt, M.H.O., Wolfville.

Second Vice-President—Dr. W. F. McKinnon, M.H.O., Antigonish.

Secretary—Dr. W. H. Hattie, Provincial Health Officer, Halifax.

Councillors—Dr. S. Keith, M.H.O., New Glasgow; Dr. S. A. Fulton, M.H.O., Truro; Dr. C. W. Bliss, M.H.O., Amherst.

The first paper of the morning session, entitled "The Enforcement of Health Legislation," was presented by Mr. Stuart Jenks, Deputy Attorney General. This reviewed in a scholarly and most interesting and practical manner the evolution of medical practice. The old relations between law and medicine were referred to, and the modern method of making much of our law by legislation

was contrasted with the older method, by which all law was made by the judges. It was shown that law must express the thoughts, customs and conditions of the people if it is to be successfully administered. Any law which does not do this, even though excellent in itself, will not succeed. The influence upon legislation of the common law developed by the courts was referred to as being especially directed to the protection of individual rights. The individualistic philosophy of the eighteenth century has materially affected the general trend of legal thought. The statutes of to-day, being projected into this atmosphere, are to a considerable extent interpreted by the application of the general principles of law thus developed.

Legislation dealing with public health matters has been evolved from a variety of sources. Thus we have federal legislation relative to foods and their adulteration, provincial acts covering the control of contagious diseases, and certain provisions of the criminal code which deal with nuisances. We are especially concerned with provincial legislation. It is most desirable that law should be easily enforced. Suspicion exists in some quarters that medical men hold extreme views, and that they are sometimes not

altogether altruistic in their aims, so opposition is offered to the efforts they make at securing public health legislation. Non-enforceable laws tend to encourage disobedience of all law, and care must be taken about placing such in the statute books. It is therefore necessary to educate the people before pushing for far reaching reforms. Any comprehensive legislation in respect to the public health must necessarily impose restrictions upon some persons, forbidding them to carry on their business in their own way, and opposition from such persons is to be expected. No private individual, unless it be some one who has a personal grievance, is likely to interest himself in the enforcement of health laws. For efficiency, there should be an enforcement officer with ample powers.

The form of health legislation should be carefully adapted to the subject matter. Such legislation must usually be more or less flexible. It is impossible to anticipate all the conditions which may arise, so our statutes must lay down general principles and leave the particular method by which these principles shall be applied to the local health authority. The regulations passed by local boards of health should be drafted in accordance with some general principle, applicable to all persons concerned. They should be uniform, fair and equitably administered. Courts are slow to interfere with local regulations which are fair in their application.

In this connection, Mr. Jenks pointed out that local regulations, even though submitted to and approved by the Governor-in-Council, and thus said to have the force of law, if ultra vires and not in accordance with statute, have no effect. So local authorities have to assume full responsibility for their validity.

In referring to the financial aspect of public health administration, the sensitiveness of municipalities in the matter of expense was mentioned. It is at times difficult to make a distinction between expenditures made in the suppression and those made in the prevention of disease. Yet expenses incurred in the suppression of diseases and those incurred in other public health activities are appor-

tioned differently under our Act. It is very necessary to have a workable scheme of financial administration in public health work.

Dr. Hattie gave a most excellent paper on "The Opportunities of the M. H. O.," which will appear in full in our November issue.

"A Few Hints to the Medical Profession in Relation to Public Health Work" was the title of a comprehensive paper offered by Dr. Geo. E. DeWitt. The author discussed the need for special provision in the schools for backward children, for controlling the reproduction of the unfit, and for proper teaching of sex hygiene in the schools. Present methods not only make it impossible for the backward child to receive a practical education, but the presence of such a child in a class composed otherwise of bright children proves a hindrance to the progress of the others. The physician should not fail to make use of his opportunities to discourage marriages between the unfit. The teaching of sex hygiene is called for in order that the developing child may be put upon his guard and may know of the dangers which beset the unwary when inclination is always followed. Dr. DeWitt also dealt with the importance of industrial hygiene and with the public health aspects of forest conservation, and, further, made trenchant reference to the scheme for establishing district sanatoria for tuberculosis, showing the great and pressing need for such institutions.

In the afternoon the first papers read were those of Dr. Smith L. Walker, on "School Hygiene," and Dr. S. A. Fulton on "Medical Inspection of Rural Schools." Dr. Walker had left for the front a few days previously, so his paper was read by the secretary. This paper dealt with the instruction of the teacher, for the sake of both her own health and that of the children, with the proper location, planning, lighting, heating, ventilation and sanitary care of the school building, with the correction of common anatomical defects in the child and his instruction in the principles of personal hygiene, and with the education of the public in the need for properly constructed, properly equip-

ped and properly managed school buildings, and for a curriculum adapted to the capabilities of the individual child. Dr. Fulton's paper considered the difficulties of securing systematic medical inspection of rural schools, and outlined a scheme by which the services of a Victorian Order Nurse, now in the employ of the County of Colchester, might be utilized to partially solve the problem in that county. This nurse might visit each school at intervals, endeavor to detect the more obvious defects, give health talks and otherwise fulfil useful purposes.

Upon motion a committee was appointed to draw up a resolution to be forwarded to the superintendent of education, asking that instruction be given in the rudiments of medical inspection at the Normal College, that all plans for new school buildings be submitted to the education office for approval, and recommending that he urge upon School Trustees the need for general adoption of a system of medical inspection of school children.

Dr. A. G. Nicholls, the Director of the Laboratory, then read his paper on "The Laboratory in Public Health Work." This was a very clear and explicit enunciation of the place which the laboratory takes in respect to the health of the public. The need for safeguarding the laboratory against exploitation for the benefit of the individual rather than the benefit of the public was stated, and the difficulties and limitations under which the work of the laboratory is carried on were described. Dr. Nicholls said that he had been much pleased, on assuming his position, to find the laboratory so well equipped. He pointed out the necessity for providing information which is necessary for the proper interpretation of laboratory findings, and showed very clearly that the laboratory should be regarded, in many instances, as an aid to diagnosis rather than as a maker of diagnosis. Reference was made to the necessity for collecting specimens and forwarding them in strict accordance with instructions. The valuation of bacteriological examination of specimens of water and milk was fully discussed, and a frank statement made as to the limitation imposed upon

the bacteriologist in interpreting his results.

The paper on "Anti-typhoid Vaccination," by Dr. C. W. Bliss, recounted in an interesting manner the experiences of the author in the inoculation of a large number of troops. The method followed was fully outlined. No bad results followed, although some of the men complained of symptoms resembling those of influenza for a day or two. Dr. O'Neil (Louisburg), Dr. Jost, Dr. Stramberg (Trenton), Dr. Clarence Miller and Dr. Hattie discussed the paper. Drs. O'Neil, Stramberg and Miller spoke of their personal experiences, which resembled those of Dr. Bliss. Dr. Stramberg had used the vaccine in three cases after the development of typhoid symptoms, the disease running a mild course in each instance. The treatment of typhoid carriers and the possibility of a temporary increased susceptibility to infection following anti-typhoid inoculation were discussed.

"The Public Health Aspects of Alcoholism" formed the title of a very vigorous and comprehensive paper by Dr. Clarence Miller. The subject was considered in its various phases, and its influence upon the public health was shown to be intimately associated with practically every phase. Its influence in producing poverty, degeneracy and crime, in reducing the moral sense, in fostering domestic discord, in causing the degenerative diseases, has a very direct bearing upon the health of the public. At the conclusion of the discussion on his forceful paper, Dr. Miller moved the following resolution:

"Whereas it has been absolutely proven that alcohol has a pernicious and injurious effect on the public health of our country, in that it lowers the resistance of the individual to disease, thereby predisposing to tuberculosis and other infectious diseases;

"And whereas it is one of the chief contributing factors to poverty, misery and crime;

"Therefore we, as Health Officers of the Province of Nova Scotia, place ourselves on record as opposed to its use as a beverage and strongly recommend its use only upon medical prescription."



XIX



HELEN M. MERRILL

"Helen M. Merrill is an impressionist. She can transcribe to paper, in prose or verse, a mood of mind or nature with a fidelity truly remarkable. Her work in poetry is singularly vital and wholesome, and has in it in abundance the promise and element of growth. She is equally happy in prose or verse, and is so conscientious in her work that little coming from her pen has about it anything weak or inartistic. Miss Merrill writes as one with the mystery of nature around her and the key to its secrets in her heart. Her gift as a singer is a genuine one."—Thomas O'Hagan, M.A., Ph.D., in Canadian Essays.

HELEN M. MERRILL is a daughter of the late Edwards Merrill, County Court Judge at Picton, Ontario, and Caroline (Wright) Merrill. She was born at Napanee, Ont., but was educated in the schools of Picton and at the Ottawa Ladies College.

Miss Merrill is of French Huguenot extraction, her first American ancestor having landed on this continent in 1633. He was one of the founders of Newbury Port. The family coat-of-arms has the fleur-de-lis on the shield.

Since 1905 Miss Merrill has resided with her mother in Toronto, and for some years

has been a member of the staff of the Ontario Bureau of Archives. In this position her work has been of recognized merit. Having made a special study of "New Ontario," she has contributed several series of valuable articles, topographical and relating to colonizing conditions, etc., on our great north-lands. And in collaboration with Dr. Wilfred Campbell, Miss Merrill has for some time been gathering material for a historical and genealogical work on the United Empire Loyalists of Canada.

At the Sir Isaac Brock Centenary Commemoration at Queenston Heights, Miss

Merrill officiated as honorary secretary, and also went through the ceremony of adoption into the Oneida Band of the Six Nations' Indians. She was presented with the tribal totem, and was given the Indian name, *Ka-ya-tonhs*—'a keeper of records.'

Recently the diary of John White, the first Attorney-General of Upper Canada, came into the possession of Miss Merrill, who will edit and publish it. The entries date from 1792 to 1796 inclusive, and the matter is of unusual interest to Canadians.

Miss Merrill is President of the Canadian Society for the Protection of Birds; Honorary General Secretary of the United Empire Loyalists' Association of Canada; a Councillor of the Canadian Defence League; and is a member of each of the following: The Canadian Women's Press Club; The Toronto Women's Press Club; The Women's Canadian Historical So-

ciety; The Ontario Historical Society; The English Association (organized in 1914 in place of the Canadian Society of Authors); The Chamberlain Association of America, Boston, Massachusetts, and The Society of Colonial Families, Boston. Her membership in the last two societies is due to her being a great-granddaughter of Dr. J. B. Chamberlain, who migrated from the United States to Canada before 1791.

Since the Great War began, Miss Merrill has interested herself much in collecting funds for the Belgians, and she has been appointed by Madame Vandervelde, wife of the Belgian Minister of State, as her representative in Canada for further collections.

This author has not yet published a volume of her verse, but her work has long had recognition in magazines and in anthologies.



WHEN THE GULLS COME IN

When the gulls come in, and the shallow
sings

Fresh to the wind, and the bell-buoy rings,
And a spirit calls the soul from sleep
To follow over the flashing deep;

When the gulls come in from the fields of
space.

Vagrants out of a pathless place,
Waifs of the wind that dip and veer
In the gleaming sun where the land lies
near,—

Long they have wandered far and free,
Bedouin birds of the desert sea;
God only marked their devious flight,
God only followed them day and night,—

Sailor o' mine, when the gulls come in,
And the shallow sings to the bell-buoy's
din,

Look to thy ship and thy gods hard by,
There's a gale in the heart of the golden
sky.



SANDPIPERS

Morning on the misty highlands.
On the outer shining islands;
Gulls their grey way seaward winging
To the blinking zones of blue;

South winds in the shallows singing

Where I wander far with you,
Little pipers, careless, free,
On the sandlands by the sea.

All day, on the amber edges
Of the pools and silver ledges
Of the sedgelands in the sun,
Restlessly the pipers run—

Weet, a-weet, a-weet, a-weet!
Sun and wind and sifting sand,
Joy of June on sea and land—

Weet, a-weet, a-weet, weet weet!

Evening on the fading highlands,
On the outer amber islands;
Grey wings folded in the sedges,
In the glimmer of a star
Where the lamps of Algol are
Shining on a world's white edges.

Moonlight on the sombre forelands,
On the outer, silver shorelands;
Peaceful mists that pale and drift
Seaward like a phantom fleet.
Through a sapphire, shadowed rift.

Weet, a-weet, a-weet, weet weet!
Night, and stars, and empty hushes,
Darkness in the purple rushes—

Weet, a-weet, a-weet, weet weet!

IN ARCADIE

The sea is green, the sea is grey,
The tide winds blow, and shallows
chime;

Where earth is rife with bloom of May
The throstle sings of lovers' time,
Of violet stars in lovers' clime,
Love fares to-day by land and sea,
On the horizon's utmost hill
The mystic blue-flower beckons still
Beneath the stars of Arcadie.

Love fares to-day, and deftly builds
To melodies of wind and leaves;
Castles in Spain yet brightly gilds,
And song of star and woodbird weaves,
And flowers, and pearl and purple eyes,
With roofs of ever-changing skies
And fretted walls with time begun,
Its portals open to the sun,
On dream-held hills a castle lies.

No proud armorial bearings now,
But God's white seal on every leaf;
No sapphire gleaming on my brow,
Deep in my heart a dear belief;
No grey unrest, no pain, no grief.
By day a forest green and fair,
Where veeries sing in secret bowers
And lindens blow and little flowers,
And bluebirds cleave the shining air.

By night a quiet wayside grove
Where Aldebaran lights the gloom,
And silent breezes idly rove
About a shadow-painted room
Built of many a bough and bloom—
A wafted air of myrrh and musk,
The music of slow falling streams,
A whitethroat singing in its dreams,
And thou beside me in the dusk.



A HILL SONG

There is a little hint of spring,
A subtle, silent, unseen thing
By shadowed wall and open way,
And I, a gypsy for the day,
Go straying far beneath the sky,
And far into the windy hills,
Where distant, dim horizons lie,
And earth with gleams of heaven fills.

My quest is but a singing bird,
Whose voice on uplands lone is heard,
And this my path where none hath been,
And this my tent, an evergreen;

The hills are mine own open way—
I hate the smother of the town—
I love by breezy hills to stray,
Where thawing streams come leaping
down.

Oh, joy it is and free of care,
With the sun and the wind in my face and
my hair,
Alone with the shining clouds which trail
Silently each like a phantom sail,
Over the hills, on the blue of heaven;
Oh, joy it is to wander here,
Where the wilding heart of the young,
sweet year,
Quickens the earth, and spring is near!

And joy it is, the shorebird's cry—
Full well I know he walketh by;
A sudden winnow of grey wings,
And in the light he soars and sings,
And pausing in his heavenward flight,
A heart-beat, on from height to height,
He trails his silver strains of song
By paths eye may not follow long;
Grey glimpses in the azure fade,
I only hear sweet sounds in the skies
As if the soul of song had strayed
Invisible from paradise.



BLUEBIRDS

O magic music of the Spring,—
Across the morning's breezy meads
I hear the south wind in the reeds,
I hear the golden bluebirds sing.

O mellow music of the morn,—
Across the fading fields of Time
How many joyous songs are borne
From memory's enchanting clime.

I see the grasses shine with dew,
The cornflowers gleaming in the grain,
And, oh! the bluebirds sing—and you?
We fare together once again.

O haunting music of the dusk,
When silent birds are on the wing
And sweet is scent of pine and musk—
Oh! as we wander hand in hand
Across the shadow-painted land,
I hear the golden bluebirds sing.

AN OLD TOTE-ROAD

Far inland under northern skies
A lonely forest roadway lies,
Abandoned to the sun and rain,
Where echoes plaintively again
The wilding whitethroat's tender song
And summer loiters. All along
By woodland shadows golden brown,
The old tote-road winds slowly down.

Set close by boles of balm and spruce,
By crimson-veined low boughs of moose
And olive mosses' misty veils,
The corduroy its grey length trails.
Across the azure stream of sky
No idle summer cloud sails by;
Where arching alder branches meet
At the road's bend, a blur of heat.

In fervid noonday's fragrant hour,
Incense sunblent of tree and flower
Fills every leafy wayside bower.
From whitewood branches bluebirds call;
Along the sunny forest hall
The scarlet, wild raspberries fall,
Loosed by a zephyr's light caress
Or weight of their own lusciousness.

Where drowsy goldlight filters through
The green boughs dripping honey-dew,
The pink Linnaea's flowers fair,
Star-fire and dryads' cups are there,
And lovelier than opal gleaming,
Along the trail on low wind streaming,
Enkindled by the lambent sun,
The violet flames of fireweed run.

Amid ambrosial leaf and bloom,
In aisles of immemorial gloom,
The dusky Onisheatchan is crying;
Where shadow-sifted winds are sighing,
I hear a wood god singing low,
His censer swinging to and fro,
As round and round the ancient trees
He chants his mystic melodies.

A flood of copper sunlight falls
Aslant its glowing greenwood walls,
And in the glooming forest deeps
In amber pools of fire sleeps,—
Then in an ecstasy is heard
The carol of the vesper bird,
And lonely stars creep out to fold
The earth in silence grey and cold.

THE CANADA WIND

Whence bloweth the Canada wind?
Not out of the west, though the west winds
bear

Lightsome hours and the joy of spring
And the heavenly blue of a wild bird's
wing;

For the heart of the violet scents the air,
And the scent of the violet is all too fair
Its flowers in my hair to bind—

The west wind is of the lea,
And palls on the soul of me.

Whence bloweth the Canada wind?
Oh, not from the south, for the south wind
brings

Summer and dim, sweet forest deeps,
And a bird in the wild wood hidden keeps
And mellow songs in the green light sings;
And flower, and song, and mystical things
My soul with dreamings blind—

The south wind is of the sun,
My soul is for a day undone.

Whence bloweth the Canada wind?
Not out of the east, for the east wind chills
With its dank, grey mists, and its
storms of rain,

And dawn is foredooming again and
again;

Noon's dripping sky with greyness fills,
And night is black on the sodden hills,
And never a star I find—

The east wind is of the sea,
And drives to the heart of me.

Whence bloweth the Canada wind?
Its path is the way to the world's white
rim,

The strange white tracts of the barren
zone,

Immutable, luminous, wild and lone;
Spaces enduring through æons dim,
Veiling the sea and the blue sea's brim,
Striving for ever, yet never free,
Fetters which ever bind—

The Canada wind is the keen north wind,
The wind of the secret sea,
And quickens the soul of me.



THE GOLD GIRL

When a spirit's in the aspen
And the gusty evening breezes
Through the moonlit branches shiver,
Comes again a dream illumined

In the silver, springtime shadows;
And I see as in a vision
Aspen gardens by a stream,
Aspen groves which wind unending
Where the sapphire ripples gleam.

Comes a forester belated
Through the witches' wood at even,
Where the white-leaf dull and ghostly,
And the lurid night-shade deepen.
Close he draws his garments flowing
In the gloaming of the forest,
Lest a lean hand from the frondage,
Through the green gloom and the night-
bloom,
Clutch at him to hold in bondage.

Be his quest the golden maiden
He will find her though the witches
Have beset his way with peril—
Willow-wisps and stars beguiling,
Shadow-fires in the forest;
Wood-folk wreathed in flowers yellow.
Star-dust tangled in their hair;
Be his quest the golden maiden
From the forest he will fare.

Morning gilds the aspen gardens,
And the river breezes straying
Idly stir the amber mosses
In the sunlit spaces trailing;
Amethyst, and green, and golden,
Red as gleams of ruby fire,
Flit the birds where maidens rove,
Like the fragments of a rainbow
Blown about the dreaming grove.

One among the woodland maidens
Trippeth gaily to the river,
Twining roses in her tresses,
Gold with gold, yet both of beauty;
Eyes with shadows blue as bluebirds
God made when the earth was younger
But to match the April skies;
On her brow a yellow rose-wreath,
Dream-light gleamings in her eyes.

Sweet the morning birds are singing.
And a south wind's in the aspens,
And the maiden meets her lover
At the bending of the river;
And she turneth still eluding,
Still alluring as he follows
Ever on an endless quest—
He may never feel her kisses,
Never fold her to his breast.

Yet the love they bear each other
Holds in thrall the wondrous morning;
Love which knows nor age nor morrow,

Love which fills the endless hour,
Yielding ever yet not yielded.
Life alone by love is measured,
And the prophet sees in sooth,
In love only, intimations
Of immortal life and youth.



IN MEMORIAM

About thy grave white cedars I shall plant,
And pines, and by a fountain little ferns
And flowers, maidenhair and violets;
Larches and lindens, and the lowly yew—
The linden blossoms for the golden bees,
The linden branches for a singing bird;
And by the green pools in the grassy
stream,

Where amber sunlight sifts the leaves be-
tween,

Wild bergamot and balm and mint and
musk,

As sweet as ilex groves in summertime,
As sea winds blowing from the Isle of
June;

And vines as lattices to veil the light,
Where mosses grow, and scarlet dryads'
cups,

A bosky place where falls the forest peace,
Whereto a solitary bird will stray,

Nor know that thine is not his ancient
grove,

And so will sing on many opal, autumn
eves.

And mine will be deep sighs of mingled
pain

And pride and pleasure. You will come
at morn

Or eve, and I shall know when you draw
near

By many secret tokens. The shy bird
His mellow, lone, impassioned song will
sing;

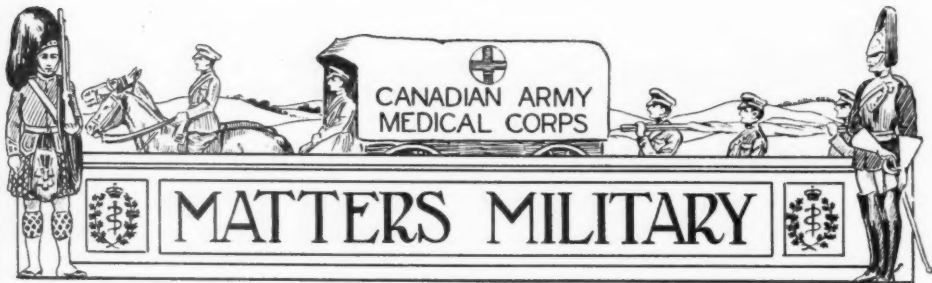
To its enthrallment I my soul shall yield,
And all of life still be illumined by thy
love.

And when of earth the last white star has
set,

In after years we twain shall loiter there
In the green gloaming of the lonely pines,
To hear the hermit thrush which still will
sing,

While we forget that once we suffered
death,

Only remembering we ever live and love.



THE TORONTO RECRUITING DEPOT

By **OSWALD C. J. WITHROW, M.B., M.R.C.S.**

Captain, Army Medical Corps

CANADA had never really experienced war until a year ago when 30,000 of her sons answered the call of the Empire and mobilized, with a rare enthusiasm at Valcartier. True, a decade and a half ago, a regiment of hand-picked men did valiant service on the veldt, while a second and a third contingent followed to do and die for Canada and the Empire. But now we are in the midst of a war, such as never was known before, a fight to the teeth, a conflict for the very existence of those principles which have made Britain mistress of the seas and mother of colonies in every clime. And men are needed, not by the hundreds and thousands, but by the hundreds of thousands, from this last great Western free nation. From the day war was declared men have been offering in Canada, in one steady stream, from the farm, from the office, from the university—from everywhere. The swinging march of tramping feet is heard in every town and city in the Dominion. How to obtain and examine recruits in the most efficient manner has been the problem.

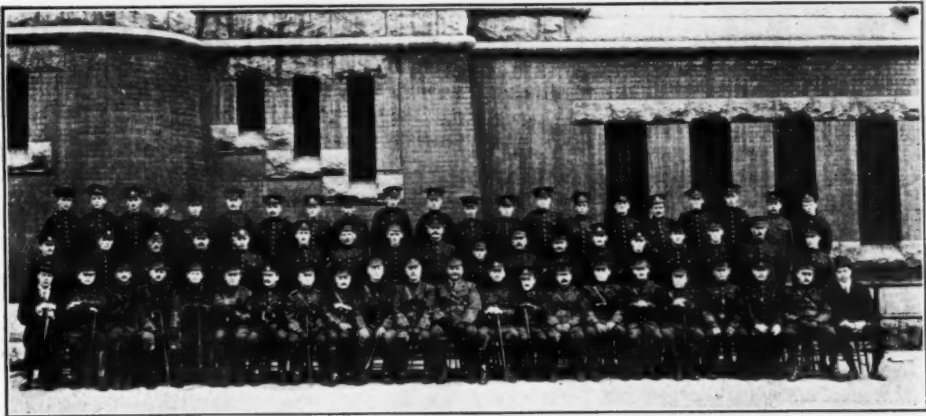
Toronto has solved the problem by establishing a Central Recruiting Depot, where recruits for all units must come for medical examination and attestation. The success of the Depot during the past six weeks has made the former methods seem very crude indeed.

A recruiting sergeant brings in a man, or perchance the man walks in without any urging other than by a conscience keen to scent his duty to the Empire, and he is at once taken in charge by the orderly room of the depot. Here he is questioned along many lines and sized up generally. If thought likely to make a good soldier, papers are filled out in triplicate, and he is conducted by an orderly to the examining room, where three or four medical officers are constantly on duty. Here he strips off his clothing, his height and weight are taken and he appears before a medical officer for a decision. Eyesight is tested first, and here many fall by the wayside. Then a thorough physical examination follows, and the recruit is pronounced fit or unfit, or he is referred to

a Medical Board of three officers. If he is found fit, his papers are signed by the medical officer, and he is led away to the room of the attesting officer, Capt. T. A. E. World, where he is sworn in and his papers completed. At once he goes on the strength of the Depot Battalion, and is subject to drill and eligible for pay. If he is found unfit, a certificate to this effect is given to him, signed by the medical officer. It is the desire of all the medical officers to accept men if at all possible, and so all doubtful cases come before a Board. Here he may be pronounced fit or unfit, or may be sent to a Hospital for some slight defect to be remedied. This method of dealing with recruits results in uniformity and increased efficiency. The officers directly responsible for the work of the Depot are: Lt.-Col. Henry Brock, Major Le G. Reed and Lieut. P. W. Plummer. Lieut. H. B. Wood acts as paymaster, while Major G. C. Royce is in command of the Depot Battalion.

The medical arrangements up to the present have been that one week Lieut.-Col. J. E. Elliott, medical officer of the artillery, is in command; the next week Lieut.-Col. E. E. King, medical officer of the 10th Royal Grenadiers, takes over this duty, while Lieut.-Col. R. M. Hillary, medical officer of the 12th York Rangers, follows. These officers arrange the roster of medical officers for the week, from the Regimental Medical Officers and the Army Medical Corps, presiding twice daily at Medical Boards as these may be required.

Among the non-commissioned officers and men acting on the depot are a half-dozen who a year ago marched away with the Princess Patricia's Canadian Light Infantry. They did their bit in the trenches, were wounded, and are still doing their bit for those whose duty it is to keep the khaki line intact.



Officers, Medical Officers, Non-Commissioned Officers and Men detailed for duty
with the Toronto Recruiting Depot

PUBLIC WELFARE

THE SUN SWEEPED HILLS

Just to live. To feel how wonderful it is, how glorious, to be alive. Not to be absorbed in dead issues, in symbols and ceremonials, in mere imitations of life, but to live. To hear one's own heart beat. To be real, to be true, to be just—essentially alive and regenerate.

To feel strong. To realize that we are not mere thinking machines draped in cloth. To know that we are divine powers, creators of character and fate, omnipotent, free, eternal. To have all power. To hitch Niagaras to our plow. To enslave the forces of the floods. To harness the winds and ride before the storm. To exploit the sun's light. To wrap its heat about our hearts. To put even its fire in cold storage.

To cultivate imagination. To have wings and soar. To make new heavens and earths, and people them with glory-robed divinities or with shades enshrouded with gloom. To weave experience into untrammelled dreams where Love goes forth with Love, hand clasped in hand, when the moon peeps through the leaves of the June woodlands, or when December winds toss the tree-tops airily and sprinkle white star-flakes on the moss beside the frozen stream. Just to be free to ramble elate and unafraid amid the sun-swept hills and revel in the blue-arched day.

To cherish great ideals. To be true to our own souls. To love our friends tenderly. To be just to all. To breathe peace and serenity amid the thunderings of that uncivil war we so often misname "our glorious civilization."

And oh, to dream of love. That love that thrills to the sweet vibration in another heart. That greater Love that rises sacrificial to the flaming altar of the race. To join the music of the universal choir. To love as God loves. To be creative and free. To drive stagnant waters into life's stream. To refuse to shut up the toil and happiness of the poor in our private bank. To decline to make a morass of our own hearts. To be poise to the restless, comrade to the lonely, working-partner to the weary. To be serene in the face of all discouragements. To rise to altitudes where Love makes vicarious restitution to the dispossessed of all that selfishness has usurped. To make our daily lives—ourselves—sufficient evidence that THERE IS NO WEALTH BUT LOVE.—A. D. Watson.

The Sanitary Inspectors' Association of Western Canada

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CARRIERS AND UNRECOGNIZED CASES OF COMMUNICABLE DISEASE AND THEIR RELATION TO SPREAD AND CONTINUANCE

By W. J. WATT, Cert. Ins. San. Assoc., Scotland

Chief of Division of Infectious Diseases, Winnipeg Health Department

(Read before the Winnipeg Members.)

THE subject chosen for a paper and discussion before the members of this branch of our association is probably one deserving of more able handling than we laymen can be expected to give. However, as this branch of sanitary science has been my principal study during the past ten years, I hope to be able in this short paper to interest a few of our members and in the discussion to follow, to glean some new ideas.

In giving this paper I fully expect to receive a goodly share of criticism because of its original matter. In no field of sanitary work is our work more progressive than in this particular branch and changes in method of handling our work have been brought about in the last ten years that many sanitariums who knew only the old ideas have been slow to accept. We are indebted largely to the work of bacteriology for this advance and the subject presenting these theories, although comparatively new from a sanitary inspector's viewpoint, is firmly established in most public health departments. Medical health officers with their staff of inspectors have in recent years traced many outbreaks of typhoid fever, diphtheria, smallpox, etc., to carriers and unrecognized cases.

In cases of disease known by its particular organism there is no difficulty in

substantiating the claim, but in some diseases the organism by which the disease may be recognized has not been isolated, nevertheless the experience of those who have had to cope with scarlet fever and smallpox outbreaks amply justifies the stand taken, namely, that carriers and unrecognized cases of these and other diseases are important factors in the continuance of communicable disease. I could relate numerous instances where we have located them in the course of our work in this city. Before the carrier theory came into existence many outbreaks of disease were put down to having their origin in bad drains, infected clothing, or general insanitary surroundings. Undoubtedly such conditions might prove a predisposing factor, but not the actual cause of the infection. The general sanitary surroundings should always be kept up to a high standard, but we must now look for other agents as the cause of infection. Much infection is got through contact with previous cases or infection from contaminated food supplies, but carriers and unrecognized cases as the primary cause must always be kept in mind. Diseases in this country in which we generally watch for carriers are typhoid fever, scarlet fever, diphtheria and possibly measles. Diseases in which unrecognized cases develop embrace almost, if not all, zymotic diseases.

First let me explain the term "carrier." This term is applied to a person not showing any clinical symptoms of the disease of which he is a carrier. That is to say he may be a carrier of typhoid fever through discharging in the urine and faeces germs of this disease. He may be a carrier of diphtheria through having large unhealthy tonsils where germs may lodge without harm to the individual, or it may be that a slight nasal discharge may be found loaded with the germs and the patient apparently not affected in the slightest. A similar condition seems to present itself in some cases of scarlet fever, particularly where the case has been of a severe form and accompanied with complications. In typhoid fever he may be a carrier of the germs for years, although we believe this to be of rare occurrence. The condition may not be constant, and in fact often appears to be intermittent. The outbreaks of typhoid fever traced to carriers are numerous and the story of "Typhoid Mary" of New York is sufficient illustration of what a carrier may do. This short paper does not allow of time to detail the findings of those whose work it was to prove that this woman was a carrier and a danger to a community, but investigation proved that several homes had suffered as the result of her term of service. Carriers of disease can lessen the danger of spread by thorough disinfection and cleanliness.

Diphtheria Carriers.

So common has it become to public health bodies, institutions for the care of children and hospitals to learn by bitter experience of the presence of carriers in their midst, that they no longer take chances by admitting newcomers to institutions or patients to hospitals without first taking swabs from the throat and nose and submitting same for examination. It is not an uncommon occurrence to have to isolate and treat an unsuspecting individual. Where you get enlarged unhealthy tonsils you often find a carrier or the trouble may be found in the mucous surfaces of the nasal orifices; either may look quite innocent and still prove on swabbing to be positive and highly dangerous. All carriers may not be dangerous, that is, from the standpoint of giving infection, but it is safest to treat them

as dangerous until they prove negative. Undoubtedly they are related closely to the continuance and spread of this disease. This is more likely to result in the cases which are known to be chronic carriers. As very often such cases are found to be intermittent and therefore not easily dealt with.

Scarlet Fever.

With this disease we are handicapped through not having knowledge of the organism to prove the case. There is no doubt that scarlet fever can be conveyed to a person through one who to all appearances has perfectly convalesced from this disease. Just how it is conveyed can not be easily explained until the germ of this disease has been isolated. We consider, however, that any recently convalesced patient who suffers from sore throat, unhealthy tonsils, discharges from nose, ears, glands, or other sores recurring after discharge from hospital, or liberation from quarantine, is likely to prove dangerous if exposed to susceptible individuals, this has been my experience on numerous occasions. These so-called carriers do not seem to be so persistent as in other diseases, and it is doubtful if there are what one would term chronic carriers of scarlet fever. It is sufficient to know, meantime, that they are often in an infectious state for several months and that the mere removal of the epidermis, that is, the desquamating condition, is of very doubtful value in determining the danger of carrying infection.

Unrecognized Cases.

I doubt if there is any feature of more importance in the preventing of spread of communicable disease than the arresting of unrecognized cases. In almost every disease we find evidence of the mildness of the type through the infection of those who have unwittingly been in contact with the disease running a course on an unsuspecting patient, so mild in character as to escape recognition, or it may have been wrongly diagnosed by an attending physician, and thus remain unrecognized. This, however, we consider is of rare occurrence. Time does not permit of going into detail in discussing all the diseases in which evidence of unrecognized cases are found, I will confine my remarks to a few of the best known.

Typhoid Fever.

When a physician is called in to attend a patient who is showing symptoms of typhoid, Widal blood tests are generally tried. This may be negative and the case passed over. After a day or two the patient feels better and may never show any further symptoms of the disease. Through negative blood tests and speedy termination of the symptoms the case is passed over as grippe or other condition, such as, run down in health, and continues to be believed as such until another member of the family is infected in a more marked form. Cases are on record in this city which recovered from typhoid fever without even calling a doctor to attend and which infected a milk supply, causing quite an extensive outbreak on the milk route. The history of a member of a family having been sick several weeks prior to a case of typhoid developing in another member of the household is not an uncommon occurrence, and although such a person need not necessarily be put down as having had typhoid fever, yet in view of the facts known to us, and barring other more probable sources of infection being traced, an inspector would be quite entitled to suspect such a person of having recovered from a mild type of the disease. Much data has been collected showing outbreaks of typhoid fever from contaminated water, milk and food supplies, such contamination often having for its origin individuals or families who have suffered from the disease and indiscriminately placed the discharges in such a position as to cause direct contamination or indirect through the transfer from soiled clothing to fingers or the carrying by flies.

It is common knowledge to most inspectors how dangerous a procedure it is to place discharges of a known typhoid patient in outside closets even though disinfected, therefore one can readily understand how much more dangerous it becomes when we know that discharges from persons not known to have the disease and who have recovered from an attack has been thrown into a box closet to which flies have access, or it may be close to some water supply, as is often the case in rural districts where subsoil water is often used for drinking purposes.

Diphtheria.

Unrecognized diphtheria cases are perhaps the most common form of communi-

cable disease known. This is due to the ease with which the tests of swabs taken from the suspected person can be made and the ease proven by bacteriological findings. Many private homes have had bitter experiences through nursing to recovery a case of sore throat which in turn caused a more severe form of the same disease, namely, diphtheria, in other members of the family. Such cases are liable to be nursed to a critical stage before a doctor is called, in the hope that it will respond to the treatment given the preceding case. In this lurks the danger, as to successfully combat this disease it is necessary to have early treatment in even moderately severe forms of the disease. It is not necessary to consider sore throats as being the cause, in some instances it has been found that the unsuspecting member of the household causing the trouble of a case of diphtheria does not suffer from sore throat, but sore nose, and quite recently in this city a number of such cases were located through the efforts of our medical school inspection staff. Some of these carriers were treated by a physician acting for the Health Department, and in one case the family was swabbed regularly for three weeks, and in another case a boy was treated for five weeks before getting rid of the condition.

These cases just referred to were treated in their respective homes, and while strict isolation of the carrier was not practised by the parents, yet sufficient attention was given to the child carrying the disease to reduce to a minimum the chances of transferring of infection to others who were in contact. It is not necessary to quote further cases; we have them when diphtheria is in our midst and they vary in infectivity. The hospitals which take care of our cases can supply much interesting data on the length of time necessary to clean up some of the cases. Some of the institutions in this city are constantly swabbing the inmates and occasionally a member of the staff or some recently admitted patient is shown to be carrying the germs of the disease and running an unrecognized case of nasal diphtheria. As has been said earlier in the paper they may or may not be dangerous, but our duty is to see them cleaned up before allowing them to mingle with healthy members of the community. Unrecognized cases we believe may terminate

as a carrier and were such treated as true cases in place of passing from the stage of unrecognition to that of carrier much would be attained towards the prevention of the spread of this disease.

Scarlet Fever.

Unrecognized scarlet fever is probably more prevalent than we care to admit. In this city we have had many traced cases of the unrecognized type, and the more prevalent the disease is, the greater the number of missed or unrecognized cases found. This is done by tracing back from reported cases. The control of outbreaks can be largely influenced by the success of the department in arresting these cases, particularly should they run into a stage of discharging sores. Naturally we want to know why they are missed or unrecognized. We are loath to believe in some instances that they were honestly unrecognized cases, however, we must accept it if no evidence to the contrary is given. In one instance a practising physician told me that he believed a member of his own family had suffered from scarlet fever prior to the second case developing in the home. The only evidence of the disease was sore throat and swollen glands. Some cases have a rash only lasting a few hours. The slight elevation in temperature is put down as caused by the stomach, and the rash is called a stomach rash. The conditions which go to make up a missed case

are not constant and we must assume that many of them are only slightly infectious, and in mild cases the duration of infectivity is short. Nevertheless the work of watching for missed cases is most important.

Smallpox.

That smallpox need not present much eruption in some cases nor need the patient be violently ill are established facts. The patient may only present a few vesicles; the illness preceding this eruption may be no worse than an attack of grippe, for which ailment people often prescribe their own medicine. Under such circumstances one can readily understand how easily cases of smallpox can escape recognition. During the year 1914 our smallpox situation was kept alive through the bobbing up of unrecognized cases and often recovered cases. The tracing of the source of infection for reported cases was often the manner in which the unrecognized cases were located. Many different excuses are advanced by the affected parties, but we must admit that in many instances their ignorance is perfectly pardonable, and we can only see one way to offset such mistakes, viz., call in a physician or the Medical Officer of Health to all cases of eruptive fever. In closing this paper I must apologize for its brevity, but I trust sufficient has been said to allow of a good discussion.

MONTHLY JOTTINGS

THE Executive have prepared a Roll of Honor and inscribed thereon the names of its inspectors and nurses, members of the Association, who have gone on active service. The roll hangs in a prominent place in the office of the Executive Committee.

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We are glad to report that our gentle hint has resulted in the payment of several subscriptions which were in arrears.

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Two new associate members joined last month.

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The Executive have prepared a report for the year 1914-15, which will be published shortly. We are, however, waiting for the reports of some of the Provincial centres.

The Board of Health for the Province of Manitoba are about to appoint an inspector to enforce the new regulations regarding hotels throughout the Province. There are many applicants. Your Executive have written to the Board protesting against the appointment being given to any person except a properly qualified sanitary inspector.

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We are glad to note that Mr. A. Mc. F. S. Allan, late sanitary inspector at Weyburn, Sask., has secured an appointment with the Saskatchewan Government, under Mr. Thomas Watson, Chief Inspector for that Province, and Vice-President of this Association.

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The Winnipeg branch is preparing for a busy winter session. Other branches should be getting ready also.

